M7-011/-016 SpeedClave®

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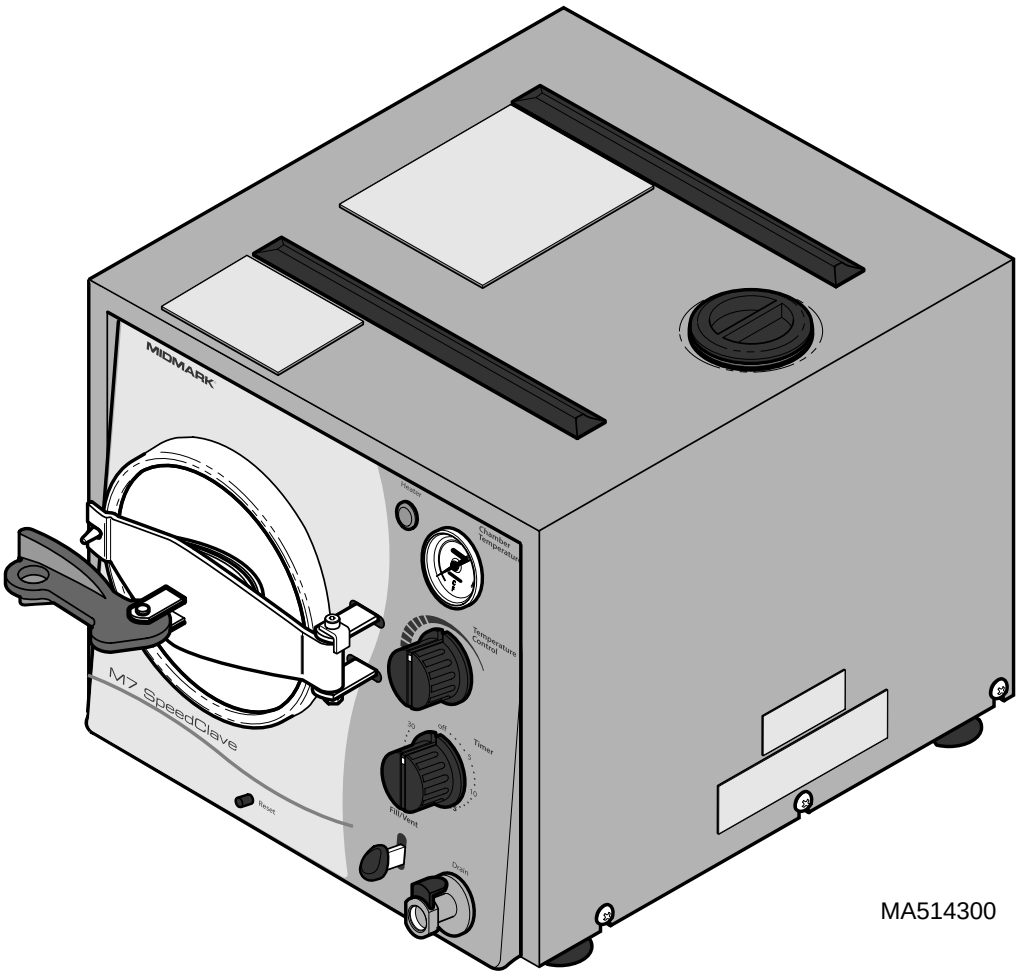
Used on units with
Serial Number Prefixes:
MH, MJ, MK, ML, MM, and MN
(ML Shown)

Steam Sterilizer

Service and Parts Manual



MA514300

FOR USE BY MIDMARK TRAINED TECHNICIANS ONLY

Part No. 004-0228-00 Rev. D (1/02)

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IMPORTANT INSTRUCTIONS

General Safety Instructions

Safety First: The primary concern of Midmark Corporation is that this sterilizer is maintained with the safety of the staff in mind. To assure that services and repairs are completed safely and correctly, proceed as follows:

(1) Read this entire manual before performing any services or repairs on this sterilizer.

(2) Be sure you understand the instructions contained in this manual before attempting to service or repair this sterilizer.

Warnings

Throughout this manual are Note, Caution, and Danger paragraphs that call attention to particular procedures. These items are used as follows:

NOTE
A note is used to amplify an operating procedure, practice, or condition.

CAUTION
A CAUTION is used for an operating procedure, practice, or condition which, if not correctly followed, could result in equipment damage.

DANGER
A DANGER is used for an operating procedure, practice, or condition which, if not correctly followed, could result in loss of life or serious personal injury.

Warranty Instructions

Refer to the Midmark "Limited Warranty" printed on the back cover of the Installation and Operation Manual for warranty information. Failure to follow the guidelines listed below will void the warranty and/or render the sterilizer unsafe for operation.

- In the event of a malfunction, do not attempt to operate the sterilizer until necessary repairs have been made.
- Do not attempt to disassemble sterilizer, replace malfunctioning or damaged components, or perform adjustments unless you are one of Midmark's authorized service technicians.
- Do not substitute parts of another manufacturer when replacing inoperative or damaged components. Use only Midmark replacement parts.

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SECTION I
GENERAL INFORMATION

1.1 Scope of Manual

This manual contains detailed troubleshooting, scheduled maintenance, maintenance, and service instructions for the M7 SpeedClave® Sterilizer. This manual is intended to be used by Midmark's authorized service technicians.

1.2 How to Use Manual

A. Manual Use When Performing Scheduled Maintenance.

(1) Perform inspections and services listed in Scheduled Maintenance Chart (Refer to para 3.1).

(2) If a component is discovered to be faulty or out of adjustment, replace or adjust component in accordance with Maintenance / Service Instructions (Refer to para 4.1).

B. Manual Use When Sterilizer Is Malfunctioning And Cause Is Unknown.

(1) Perform an operational test on sterilizer (Refer to para 2.1).

(2) Perform troubleshooting procedures listed in Troubleshooting Guide (Refer to para 2.2).

(3) If a component is discovered to be faulty or out of adjustment, replace or adjust component in accordance with Maintenance/Service Instructions (Refer to para 4.1).

C. Manual Use When Damaged Component Is Known.

(1) Replace or adjust component in accordance with Maintenance/Service Instructions (Refer to para 4.1).

1.3 Description Of M7 Sterilizer

A. General Description (See Figure 1-1).

The M7 SpeedClave® Sterilizer is a self generating steam sterilizer designed to sterilize instruments and other sterilizable goods. The major components of the sterilizer consist of a chamber, condensing tank assembly, heating element, temperature regulator relay, diaphragm cup, timer assembly, timer buzzer, manual reset overheat thermostat (low water), auto-reset overheat thermostat (low water), heater light, fill / vent valve, bellows assembly, pressure relief valve, temperature gauge, and reset button linkage assembly.

B. Theory of Operation (See Figures 5-1 thru 5-3).

Electrical Operation

Current flows thru the normally closed contacts of two overheat thermostats (also known as the low water thermostats) to one side of the contacts on the timer switch. When the timer assembly is not set to a time, the timer switch contacts are open and no path to the heating element is completed. When the operator sets the timer assembly to any time setting, the timer switch contacts are closed allowing current to flow across the normally closed contacts of the temperature regulator relay and be applied to the heating element, causing it to heat up. Current is also applied across the heater light causing it to illuminate, thus indicating that the heating element is energized. The diaphragm cup is pressure sensitive and expands outward as the pressure in the chamber increases. The normally closed temperature regulator relay is adjusted so the diaphragm cup will push open the contacts of the relay when the selected temperature / pressure is reached during a sterilizing cycle, de-energizing the heating element. When the temperature / pressure lowers slightly, the diaphragm cup contracts allowing the temperature regulator relay to close its contacts which causes current to be applied to the heating element and heater light again. The temperature in the chamber is regulated to within +1° to +2° of the selected temperature during the cycle by the continuous opening and closing of the temperature regulator relay contacts by the diaphragm cup. The timer assembly contains a timer motor which runs the timer assembly. When the timer is run down to a setting of 0 minutes, the timer switch contacts move, breaking the circuit to the heating element and heater light. A circuit to the timer buzzer is now completed, causing it to sound. The timer assembly timer motor continues to run for one minute. Then the timer switch contacts are opened, causing the timer buzzer to stop sounding.

During the cycle, if the temperature inside the chamber reaches 285°F (141°C), the normally closed manual

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SECTION I
GENERAL INFORMATION

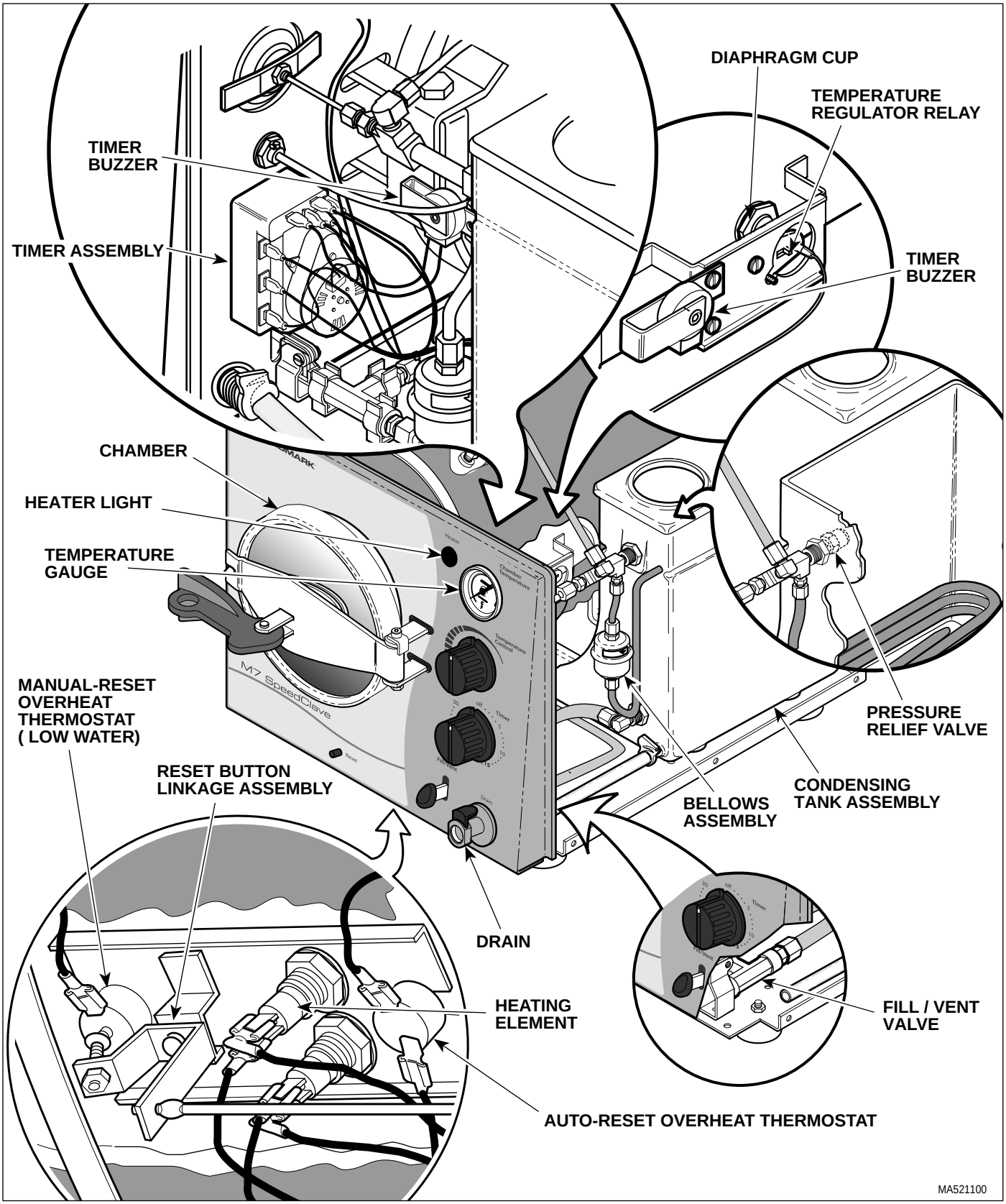

Figure 1-1. Major Components

reset overheat thermostat (also known as low water thermostat) contacts open, breaking the circuit to the timer switch, heating element, and heater light. The most frequent cause of activation of the overheat thermostat is a low water condition in the chamber. The N.C. auto-reset overheat thermostat is a safety backup for the manual reset overheat thermost and opens at 295°F (146°C). The manual reset overheat thermostat is reset by pressing the RESET button located on front panel of the sterilizer and the auto-reset overheat thermostat automatically resets after approximately six minutes.

Water / Air / Steam Flow

The M7 sterilization cycle has four phases; filling, heat up, sterilizing, and venting. During the fill portion of the cycle, the operator depresses the FILL / VENT lever which opens the fill / vent valve. Water flows from the condensing tank thru the fill / vent valve and into the chamber. When the operator visually observes that the water level in the chamber is within 1/2 in. to 5/8 in. (13 to 16 mm) from the front rim of the chamber, the operator releases the FILL / VENT lever, closing the fill / vent valve. Now the operator begins the heat up portion of the cycle by turning on the timer assembly.
During the heat up portion of the cycle, the water is heated by the heating element. As the water begins to boil, air is bled off thru the bellows assembly into the condensing tank. When the bellows assembly senses pure steam flowing thru it, the valve in the bellows assembly closes, allowing pressure in the chamber to build. The sterilizing portion of the cycle begins when the bellows assembly is completely closed (preventing steam from flowing thru it) and the desired temperature in the chamber for the selected cycle is reached. The operator sets the timer assembly for the desired length of the cycle and the cycle is run.
When the timer assembly counts down to 0 minutes and shuts off the heating element, the vent portion of the cycle begins. After the door handle has been moved to the vent position, the operator depresses the FILL / VENT lever which opens the fill / vent valve. Steam and water flow thru the fill / vent valve and into the condensing tank, venting the chamber. Coiled tubing below the water level in the condensing tank serves to turn the steam back into water.

There is a pressure relief valve which opens if the pressure in the pressure valve reaches 31 PSI (214 kPa) during a cycle. This provides a safety relief for the chamber so that unsafe pressures cannot build.

There is a temperature gauge on the front control panel which indicates the temperature inside the chamber during a cycle.

1.4 SPECIFICATIONS

Factual data for the sterilizer is provided in Table 1-1.

Table 1-1. Specifications

Description	Data
Dimensions (overall):	
Length	18.12 in (46.0 cm)
Width	13.56 in (34.4 cm)
Height	12.81 in (32.5 cm)
Shipping Carton	24 in x 16 in x 16 in (61 cm x 40.6 cm x 40.6 cm)
Door Opening	6.62 in. (16.8 cm)
Weight:	
With Reservoir Empty	30 lb (13.6 kg)
With Reservoir Full	41.8 lb (17.7 kg)
With Shipping Carton	39 lb (17.7 kg)
Water Reservoir Capacity	Approx. 1.31 gallon (4.9 Liters) to full mark
Electrical Requirements:	
100 VAC Unit (M7-013)	100 VAC 50 - 60 HZ, 15 amp, single phase
115 VAC Unit (M7-011, M7-014, and M7-015)	115 VAC ±10% 50 - 60 HZ, 10 amp, single phase
230 VAC Unit (M7-012, and M7-016)	230 VAC ±10% 50 - 60 HZ, 5 amp, single phase
Power Consumption:	
100 VAC Unit	1150 WATTS, 12 amps @ 100 VAC
115 VAC Unit	1150 WATTS, 10 amps @ 120 VAC
230 VAC Unit	1150 WATTS, 5 amps @ 240 VAC

Recommended Circuit:
A separate (dedicated) circuit is recommended for this sterilizer. The sterilizer *should not* be connected to an electrical circuit with other appliances or equipment unless the circuit is rated for the additional load.

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SECTION I
GENERAL INFORMATION

Table 1-1. Specifications - Continued

Description	Data
Chamber Pressure:	
Operating	27 psi (175 kPa)
Maximum Before Pressure Relief Valve Opens.	31 psi (214 kPa)
Chamber Temperature:	See Tables 5-1 and 5-2 for Suggested Times And Temperatures

1.5 Parts Replacement Ordering

If a part replacement is required, order the part directly from the factory as follows:

(1) Refer to Figure 1-2 to determine the location of the model number and serial number of the sterilizer and record this data. There are different letter prefixes which proceed the serial number, depending on the configuration of the unit. These prefixes are very important and are needed to order the proper parts.

(2) Refer to the Parts List to determine the item numbers of the parts, part numbers of the parts, descriptions of the parts, and quantities of parts needed and record this data (Refer to para 6.1).

NOTE
Ask the Purchasing Department of the company that owns the sterilizer for this information. Otherwise, this information may be obtained from the dealer that sold the sterilizer.

(3) Determine the installation date of the sterilizer and record this data.

(4) Call Midmark with the recorded information and ask for the Medical Services Department. See back cover of this manual for the phone number or use the Fax Order Form (see page 7-2 for Fax Order Form).

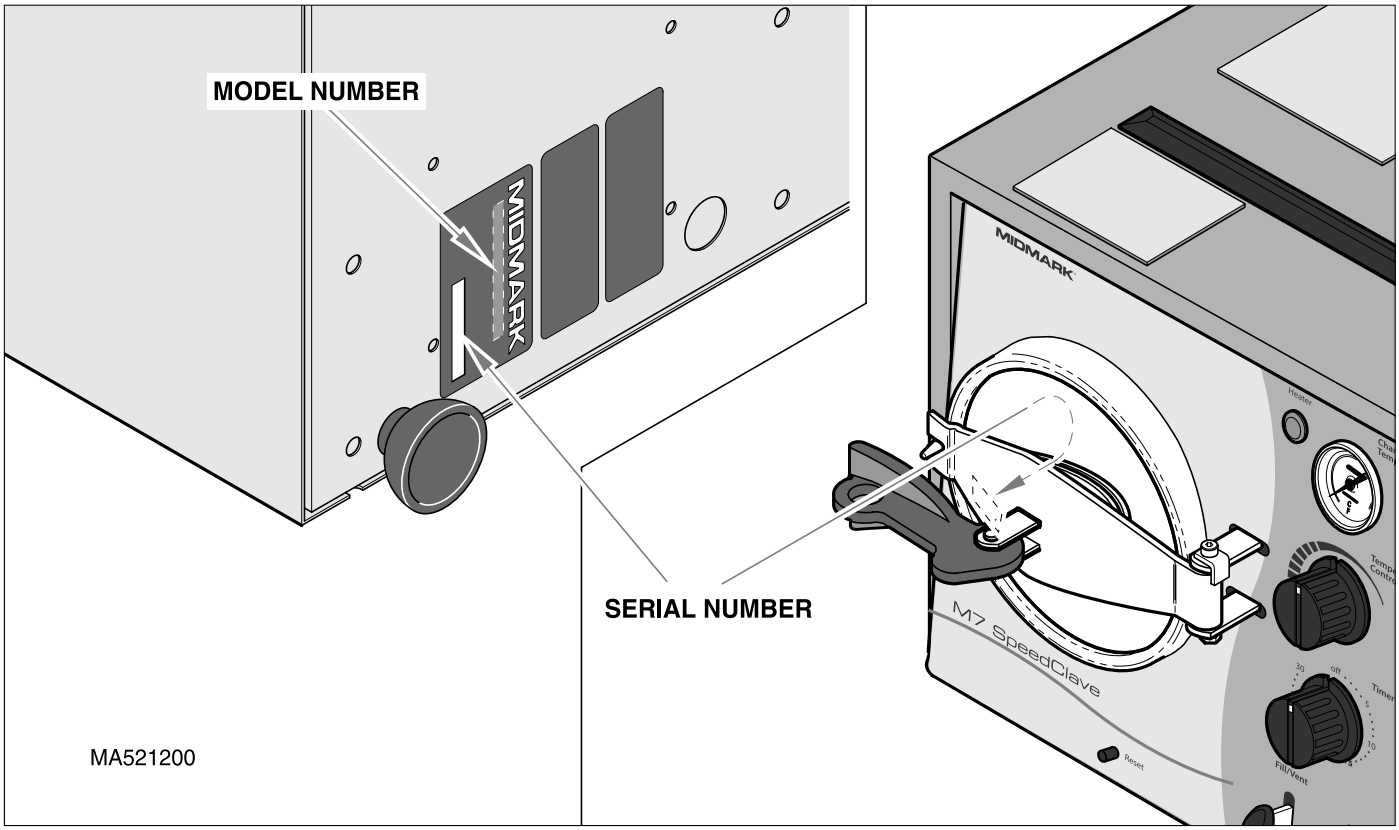

Figure 1-2. Model Number / Serial Number Location

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1.6 Special Tools

Table 1-2 lists all the special tools needed to repair the sterilizer, describes how to obtain the special tools, and describes the purpose of each special tool.

Table 1-2. Special Tool List

Description of Special Tool	Manufacturer's Name / Address / Phone	Manufacturer's Part Number	Purpose of Special Tool
Maximum Registering Thermometer *	Midmark Corporation P.O. Box 286 60 Vista Drive Versailles, OH 45380-0286 (937) 526-3662	011-0012-00	Used to check the maximum temperature reached inside the pressure vessel during a cycle to diagnose malfunctions and/or adjust the maximum temperature potentiometer to a correct setting.
Multimeter *	Commercially Available	Any Type	Used to check probes, switches, and connections for proper function by performing continuity checks.

**** Tool should be calibrated annually to ensure proper specifications are met.***

SECTION I
GENERAL INFORMATION

SECTION II
TESTING AND TROUBLESHOOTING

2.1 Operational Test

In order to effectively diagnose the malfunction of the sterilizer, it is necessary to perform an operational test as follows:

DANGER
Refer to the operator manual for complete instructions on operating the sterilizer. Failure to do so could result in severe personal injury.

(1) Place the sterilizer on a level surface.

(2) Plug the sterilizer into a properly grounded receptacle, capable of supplying correct and adequate power to operate this sterilizer.

(3) Remove the fill cap from the condensing tank.

NOTE
Overfilling will cause sterilizer to malfunction.

(4) Fill the condensing tank to the Full Mark [molded ridge located approximately 2.25 in (5.7 cm) down from the top of the condensing tank] with distilled or demineralized water. Replace filler cap.

(5) Swing the door handle to the unlatched position and then pull the door out of the chamber.

CAUTION
Ensure that the Maximum Registering Thermometer has been shaken down to its lowest setting. Failure to do so could result in an incorrect reading.

(6) Place a Maximum Registering Thermometer in the middle tray toward the door of the sterilizer (Refer to Table 1-2 for special tool).

(7) Depress the FILL / VENT lever and allow the water to fill the chamber until the water level is within 1/2 to 5/8 in. (13 to 16 mm) from the front rim of the chamber; then release the FILL / VENT lever.

(8) Close and latch the door in the chamber as follows: Insert the right edge of the door into the chamber and then push the rest of the door into the chamber. Latch the door by swinging the door handle all the way to the latched position.

(9) Set the TIMER knob to its maximum setting of 30 minutes. Set the TEMPERATURE CONTROL knob to its maximum setting of 270°F (132°C) by turning the knob counter-clockwise as far as possible.

(10) Observe. The HEATER light will illuminate indicating that the heating element is energized. Should begin to hear water boiling in the chamber and steam and air releasing thru the bellows assembly. Should hear the bellows assembly close completely - hissing sound should almost completely stop. The HEATER light should flash on and off during the cycle indicating the heating element is being energized and deenergized to regulate the temperature in the chamber.

(11) Record the highest temperature reached during the cycle from the TEMPERATURE gauge on the front panel of the sterilizer.

(12) Observe. Wait for the TIMER knob to run down to 0 minutes. The timer buzzer will sound when the timer assembly has run down to 0 minutes. This is to alert the operator that the sterilization cycle is completed. At this time, power to the heating element and HEATER light is removed. After 1 minute the timer buzzer will stop sounding. Proceed immediately to step 13.

(13) Swing the door handle to the vent position.

(14) Depress the FILL / VENT lever to vent the chamber; then release the lever once the chamber is vented. Allow chamber to cool.

(15) Observe. Water and steam will flow into the condensing tank, making a bubbling sound. When the bubbling sound stops and the door pops open, the chamber will be vented.

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SECTION II
TESTING AND TROUBLESHOOTING

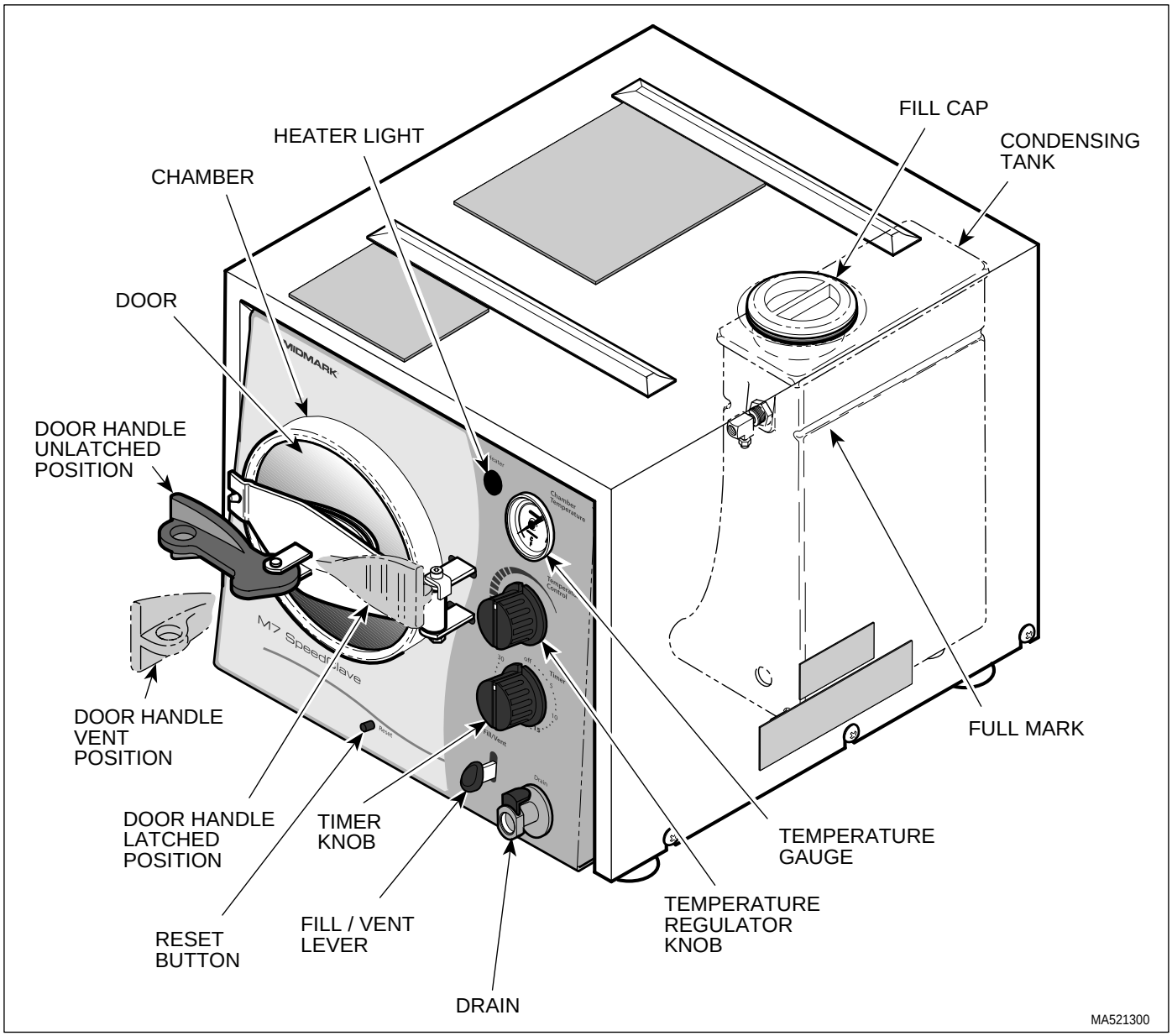

Figure 2-1. Operational Test

(16) Allow the Maximum Registering Thermometer to cool and then remove it from the chamber.

NOTE
The Maximum Registering Thermometer has an accuracy of ± 4 °F (± 2.2 °C).

(17) Read the temperature on the Maximum Registering Thermometer. The reading should be 270 °F - 272 °F (132.2 - 133.4 °C) and should match the temperature reading recorded from the TEMPERATURE gauge during the cycle.

2.2 Troubleshooting Procedures (see next page)

Table 2-1 is a troubleshooting guide which is used to determine the cause of the malfunction.

Table 2-1. Troubleshooting Guide

Problem	Symptom	Probable Cause	Check	Correction
Unit seems powerless.	HEATER light does not illuminate when timer is set and unit does not start to heat up.	Power cord is not plugged in to wall outlet.	Check to see if power cord is plugged in.	Plug power cord into facility wall outlet.
		Facility circuit breaker providing power to unit is tripped.	Check to see if facility circuit breaker is tripped. One way of checking this is to plug a lamp into wall outlet that unit was plugged into.	If circuit breaker is tripped, determine what caused circuit breaker to trip, correct the problem, and then reset/replace circuit breaker.
		Manual reset overheat thermostat is tripped.	If the unit is hot, allow the unit to cool for 15 to 20 minutes. Press the RESET button on the front panel. Now, the HEATER light should illuminate when the TIMER knob is set.	If necessary, add distilled water to condensing tank; then press the RESET button on the front panel.
		Auto-reset overheat thermostat is tripped	If the unit is hot, allow the unit to cool for 15 to 20 minutes. Now, the PILOT light should illuminate when the TIMER knob is set.	Wait 15 to 20 minutes to allow thermostat to reset itself. Also, replace manual reset overheat thermostat. Refer to para 4.7.
		Manual reset or auto-reset overheat thermostat is malfunctioning - stuck open.	Perform continuity check on N.C. overheat thermostat (cool = closed).	If open, replace overheat thermostat. Refer to para 4.7.
		Timer assembly is malfunctioning.	Replace suspect timer assembly with known working timer assembly.	Replace timer assembly. Refer to para 4.3.
		Temperature regulator relay is malfunctioning - stuck open.	Perform continuity check on temperature regulator relay.	Replace temperature regulator relay. Refer to para 4.8.
		Wiring connections loose.	Check all wiring connections.	Clean any dirty connections. Tighten any loose connections. Replace any damaged connections.
Unit does not complete sterilization cycle properly.	HEATER light does illuminate but chamber does not reach required temperature / pressure during sterilization cycle.	Flexible shaft assembly is malfunctioning.	Check flexible shaft assembly for wear or damage.	Replace flexible shaft assembly. Refer to para 4.8.
		Temperature regulator relay is out of adjustment.	Check adjustment of temperature regulator relay.	Adjust temperature regulator relay. Refer to para 4.9.
		Temperature regulator relay is malfunctioning.	Check if temperature regulator relay is stuck open or contacts not touching properly.	Replace temperature regulator relay. Refer to para 4.8.

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SECTION II
TESTING AND TROUBLESHOOTING

Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Unit does not complete sterilization cycle properly - Continued.	HEATER light does illuminate but chamber does not reach required temperature / pressure during sterilization cycle - Continued.	Heating element is malfunctioning.	Check resistance of heating element (in ohms): 100 V, 50 Hz-8.08 to 8.94 115 V, 60 Hz-11.31 to 12.5 230 V, 50 Hz-45.65 to 50.45	If heating element resistance is not within range, replace heating element. Refer to para 4.6.
		Bellows assembly is closing prematurely or stuck in open position.	Replace suspect bellows assembly with known working bellows assembly.	Replace bellows assembly. Refer to para 4.13.
		Pressure relief valve is malfunctioning - stuck open.	Run cycle and observe pressure relief valve; it should not dump pressure until temperature gauge reads 275 degrees F (135 degrees C) +/- 2 degrees.	Replace pressure relief valve. Refer to para 4.12.
		Diaphragm cup is malfunctioning.	Replace suspect diaphragm cup with known working diaphragm cup.	Replace diaphragm cup. Refer to para 4.10.
		Fill / vent valve is malfunctioning - stuck open or leaking past o-rings.	Check fill / vent valve for dirt and o-rings for wear or damage.	Clean or replace fill / vent valve. Refer to para 4.14.
		Door gasket and / or door assembly is leaking.	Run cycle and observe for leaks around edges of door assembly.	Replace door gasket. Refer to para 4.16. Replace door assembly if necessary. Refer to para 4.15.
	Temperature reaches 210 - 212 degrees F (98.8 - 100 degrees C) during cycle and stays there.	Bellows assembly is stuck in open position.	Replace suspect bellows assembly with known working bellows assembly.	Replace bellows assembly. Refer to para 4.13.
	Time set on timer assembly does not expire.	Timer motor is malfunctioning.	Replace suspect timer assembly with known working timer assembly.	Replace timer assembly. Refer to para 4.3.
		Manual reset overheat thermostat is tripped.	If the unit is hot, allow the unit to cool for 15 to 20 minutes. Press the RESET button on the front panel. Now, the HEATER light should illuminate when the TIMER knob is set.	If necessary, add distilled water to condensing tank; then press the RESET button on the front panel.
		Auto-reset overheat thermostat is tripped.	If the unit is hot, allow the unit to cool for 15 to 20 minutes. Now, the HEATER light should illuminate when the TIMER knob is set.	Wait 15 to 20 minutes to allow thermostat to reset itself. Also, replace manual reset overheat thermostat. Refer to para 4.7.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
Unit does not complete sterilization cycle properly - Continued.	Time set on timer assembly does not expire. -Continued	Manual reset or auto-reset overheat thermostat is malfunctioning - stuck open.	Perform continuity check on N.C. overheat thermostat (cool = closed).	If open, replace overheat thermostat. Refer to para 4.7.
		Diaphragm cup is malfunctioning - is failing to open contacts of temperature regulator relay when maximum temperature (270 degrees F [132 degrees C]) is reached resulting in overheating.	Replace suspect diaphragm cup with known working diaphragm cup.	Replace diaphragm cup. Refer to para 4.10.
	Chamber does not vent at completion of cycle when the FILL / VENT lever is depressed.	Fill / vent valve is clogged with foreign matter.	Check fill / vent valve for foreign matter.	Clean or replace fill / vent valve. Refer to para 4.14.
		Tubing is clogged.	Check tubing for foreign matter.	Clean out tubing.
	Sterility Indicators show sterilization standards were not met.	Improper loading of unit.	Check operator's manual for recommended loading procedures.	Load unit properly and repeat cycle.
		Temperature regulator relay is out of adjustment.	Check adjustment of temperature regulator relay using a lag thermometer - TEMPERATURE gauge on front panel may be giving inaccurate reading.	Adjust temperature regulator relay. Refer to para 4.9.
		Bellows assembly is stuck in open position.	Replace suspect bellows assembly with known working bellows assembly.	Replace bellows assembly. Refer to para 4.13.
	Timer does not buzz at end of cycle.	Timer buzzer is malfunctioning.	Replace suspect timer buzzer with known working timer buzzer.	Replace timer buzzer. Refer to para 4.4.
FILL / VENT function does not work properly	When FILL / VENT lever is depressed, water does not flow into chamber.	Fill / vent valve is clogged with foreign matter.	Check fill / vent valve for foreign matter.	Clean or replace fill / vent valve. Refer to para 4.14.
		Fill / vent valve is not adjusted to open and close properly.	Check adjustment of fill / vent valve.	Adjust closing bracket on fill/ vent valve. Refer to para 4.14.
		Condensing tank is low on distilled or demineralized water.	Check water level in condensing tank.	Fill condensing tank with water up to FULL mark.
		Tubing is clogged.	Check condensing tank and tubing for foreign matter.	Clean out condensing tank and tubing. Replace condensing tank if necessary. Refer to para 4.18. Replace tubing if necessary.

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Table 2-1. Troubleshooting Guide - Continued

Problem	Symptom	Probable Cause	Check	Correction
FILL / VENT function does not work properly. -Continued	When FILL / VENT lever is released, water continues to enter the chamber.	Fill / vent valve is clogged with foreign matter.	Check fill / vent valve for dirt.	Clean or replace fill / vent valve. Refer to para 4.14.
		O-rings in fill / vent valve are worn or damaged.	Check o-rings in fill / vent valve for wear or damage.	Repair fill / vent Valve. Refer to para 4.14.
		Fill / vent valve is not adjusted to open and close properly.	Check adjustment of fill / vent valve.	Adjust closing bracket on fill/ vent valve. Refer to para 4.14.
	When FILL / VENT lever is depressed, water does not vent from chamber.	Fill / vent valve is clogged with foreign matter.	Check fill / vent valve for dirt.	Clean or replace fill / vent valve. Refer to para 4.14.
		Fill / vent valve is not adjusted to open and close properly.	Check adjustment of fill / vent valve.	Adjust closing bracket on fill/ vent valve. Refer to para 4.14.
		Tubing is clogged.	Check condensing tank and tubing for foreign matter.	Clean out condensing tank and tubing. Replace condensing tank if necessary. Refer to para 4.18. Replace tubing if necessary.
Non-operational problems with sterilizer.	Sterilizer slides on countertop.	Film or grease on countertop.	Check for film or grease on counter top.	Clean countertop.
		Damaged "suction" foot.	Check if "suction" foot works.	Replace damaged "suction" foot.
	Water leaks around sterilizer.	Loose fittings.	Check all fittings for leaks.	Remove fitting, coat threads of fitting with Teflon tape or sealant, and reinstall fitting.
		Compression nut and/ or compression sleeve is loose or excessively deformed.	Check all compression nuts for leaks.	Loosen compression nut. Replace compression sleeve if necessary.
		Tubing is damaged.	Check for holes, kinks, or other types of damage to tubing.	Replace tubing.
	Door handle is hard to operate.	Handle cam is dry.	Check for lubricant on cam of door handle.	Lubricate cam part of handle with high temperature grease.
	Water leaks around door during cycle.	Door gasket is worn or damaged.	Check door gasket for wear or damage.	Replace door gasket. Refer to para 4.16.

SECTION III
SCHEDULED MAINTENANCE

3.1 Scheduled Maintenance

Table 3-1 is a Scheduled Maintenance Chart which lists the inspections and services that should be performed periodically on the sterilizer. These inspections and services should be performed as often as indicated in the chart.

Table 3-1. Scheduled Maintenance Chart

Interval	Inspection or Service	What to Do
Semi-annually	Obvious damage	Visually check condition of sterilizer for obvious damage such as: cracks in components, missing components, dents in components, leaks, or any other visible damage which would cause sterilizer to be unsafe to operate or would compromise the performance of the sterilizer. Repair sterilizer if necessary.
	Fasteners/hardware	Check sterilizer for missing or loose fasteners/hardware. Replace any missing hardware and tighten any loose hardware as necessary using Loctite 242 if necessary.
	Moving parts	All moving parts should be lubricated with high temperature grease.
	Warning and instructional decals	Check for missing or illegible decals. Replace decals as necessary.
	Wiring connections	Check the integrity of all wiring connections. Clean all dirty connections. Tighten any loose connections. Replace any damaged connections.
	Easy movement of door handle	Lubricate cam of door assembly with high temperature grease.
	Door gasket	Remove door gasket and check it for dirt, voids, or deterioration. Clean gasket using a mild soap and water solution. Replace gasket if necessary. Refer to para 4.16.
	Door assembly	Check door assembly for any damage which would make it unsafe or compromise the performance of the sterilizer. Make sure long and short springs of door assembly have enough power left to open door. Replace springs or door assembly if necessary. Refer to para 4.15
	Door hinge assembly	Make sure nuts on hinge screws are secure. If nut is loose, remove nut, coat threads of nut with removable threadlocking adhesive (Loctite 242), and reinstall nut.
	HEATER light	With power to unit, set timer. HEATER light should illuminate.
	Condensing tank	Remove tank cover and inspect for foreign matter and buildup. Clean out condensing tank and remove buildup from walls of tank.
	Tubing	Remove tubing and inspect for buildup. Clean, drain, and flush tubing using Speed-Clean (directions for use are on bottle). Replace tubing if necessary. See Operator's manual.
	Chamber	Check for cracks or other signs of stress or metal fatigue. Clean chamber with Speed-Clean (directions for use are on bottle). Check chamber for excessive rust or deterioration. Replace chamber if necessary. Refer to para 4.19.
	Wire rack and trays	Check wire rack and trays for excessive rust or deterioration. Replace wire rack and trays if necessary. Refer to para 4.17.
	Suction feet	Check all four suction feet for wear or deterioration. Make sure suction feet fasten securely to counter top. Clean countertop if necessary. Replace suction feet if necessary.
	Operational test	Perform an operational test to determine if the sterilizer is operating within its specifications (Refer to para 2.1). Adjust or replace any malfunctioning components

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SECTION IV
MAINTENANCE / SERVICE INSTRUCTIONS

4.1 Introduction

DANGER
Refer to the Operator Manual for complete instructions on operating the sterilizer. Failure to do so could result in personal injury.

NOTE
Perform an operational test on the sterilizer after the repair is completed to confirm the repair was properly made and that all malfunctions were repaired.

The following paragraphs contain replacement, repair, and adjustment procedures for the sterilizer.

4.2 Cover Assembly Removal / Installation

A. Removal

DANGER
Always unplug the power cord from the wall outlet before removing any of the sterilizers cover / panels or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Disconnect power cord from wall outlet.

(2) Loosen six screws (1, Figure 4-1), three on each side, and remove cover assembly (2) from base assembly (3).

B. Installation

(1) Align channel of cover assembly (2) with rail of base assembly (3) and then slide cover assembly onto base assembly. Secure in place by tightening six screws (1).

(2) Connect power cord to wall outlet.

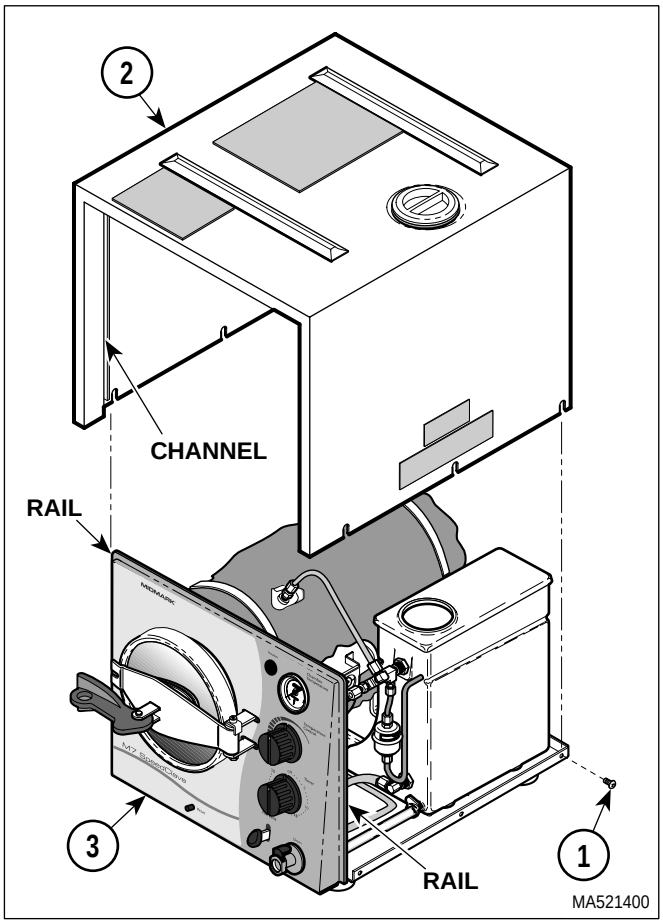

Figure 4-1. Cover Assembly Removal Installation

4.3 Timer Assembly Removal / Installation

A. Removal

(1) Remove cover assembly (Refer to para 4.2).

NOTE
The timer knob on some units may not have set screw. To remove, pull straight out on knob.

(2) Remove set screw (1, Figur 4-2) and timer knob (2) from shaft of timer assembly (3) .

(3) Tag and disconnect six wires (4) from terminals of timer assembly (3).

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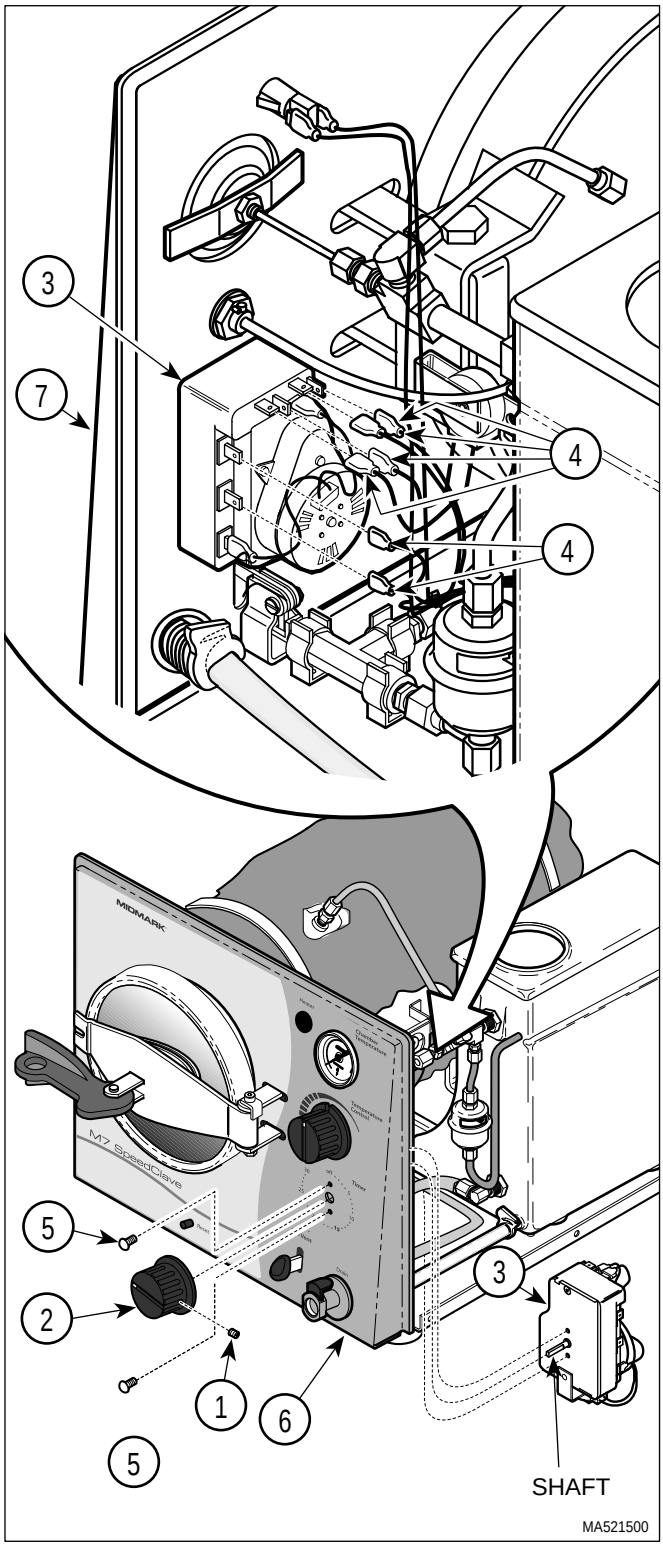

Figure 4-2. Timer Assembly Removal / Installation

(4) Remove two screws (5), and timer assembly (3) from front panel (6).

B. Installation

(1) Install timer assembly (3) on front panel (6) and secure with two screws (5).

(2) Connect six wires (4) to terminals of timer assembly (3).

(3) Install timer knob (2) on shaft of timer assembly (3) and secure with set screw (1) if required.

(4) Install cover assembly (Refer to para 4.2).

4.4 Timer Buzzer Removal / Installation

A. Removal

(1) Remove cover assembly (Refer to para 4.2).

(2) Tag and disconnect two wires (1, Figure 4-3) from timer assembly (2).

(3) Remove screw (3) and timer buzzer (4) from chamber assembly (5).

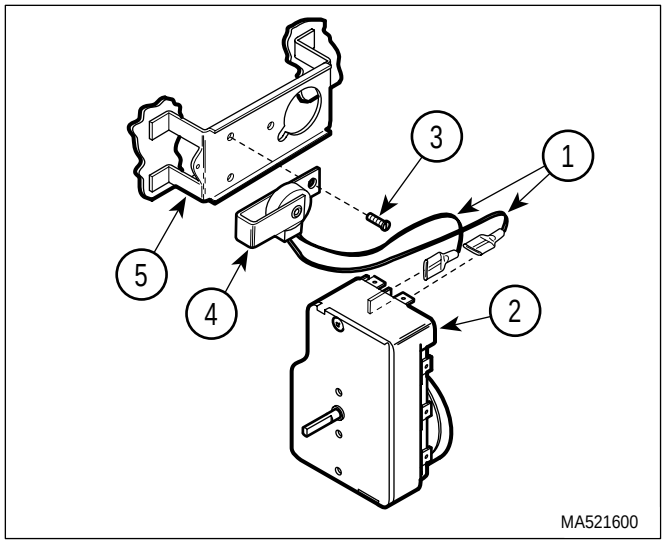

Figure 4-3. Timer Buzzer Removal / Installation

B. Installation

(1) Install timer buzzer (4) on chamber assembly (5) and secure with screw (3).

(2) Connect two wires (1) to timer assembly (2).

(3) Install cover assembly (Refer to para 4.2).

4.5 Heater Light Removal / Installation

A. Removal

(1) Remove cover assembly (Refer to para 4.2).

(2) Disconnect two wires (1, Figure 4-4) from terminals of heater light (2).

(3) Press in on four tabs of heater light (2) while simultaneously removing heater light from front panel (3).

B. Installation

(1) Push heater light (2) into front panel (3) until it snaps into place.

(2) Connect two wires (1) to terminals of heater light (2).

(3) Install cover assembly (Refer to para 4.2).

4.6 Heating Element Removal / Installation

A. Removal

DANGER

Always unplug the power cord from the wall outlet before removing any of the sterilizers cover / panels or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Disconnect power cord from wall outlet.

(2) Drain all water from condensing tank.

(3) Remove wire rack and trays (Refer to para 4.17).

(4) Lay unit onto its side.

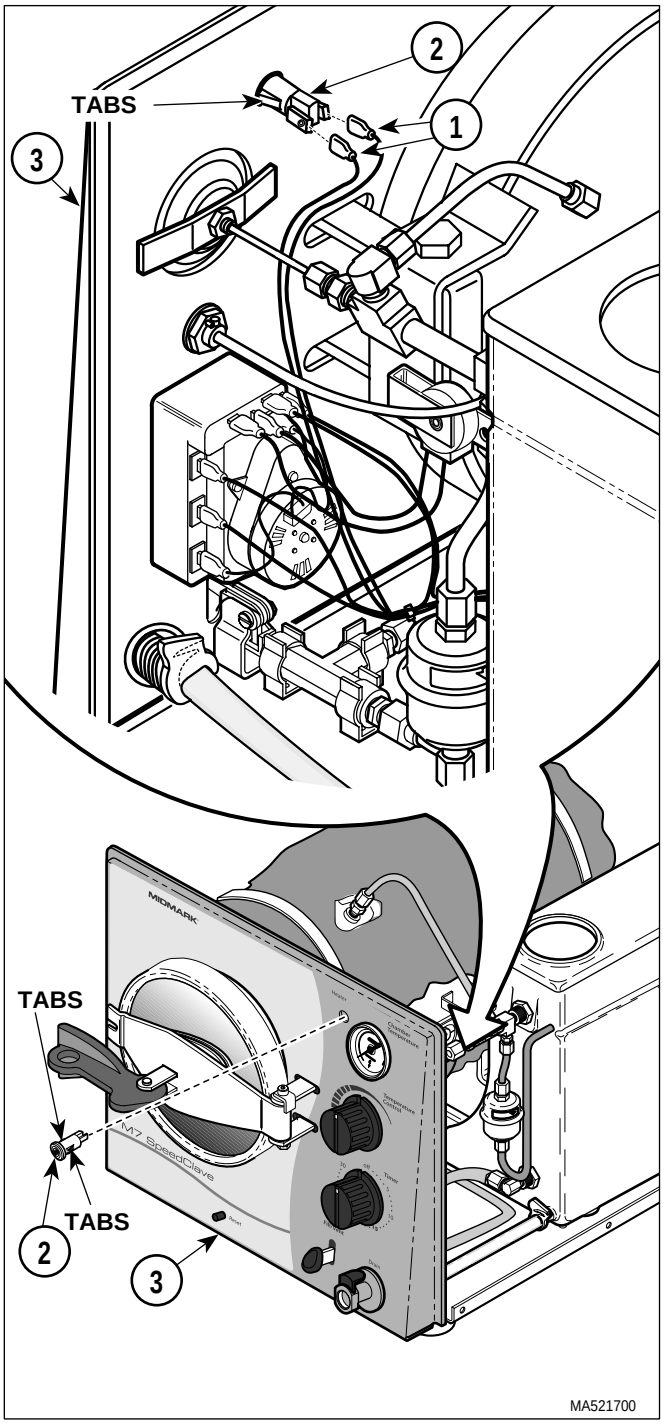

Figure 4-4. Heater Light Removal / Installation

(5) Remove screw (1, Figure 4-5) and inspection cover (2) from base (3).

(6) Taking care not to kink rod (4), flex rod and remove it from rocker bracket (5).

(7) Tag and disconnect four wires (6) from terminals of heating element (7).

(9) Remove two nuts (1, Figure 4-6), lock-washers (2), and washers (3) from terminal posts of heating element (4).

(10) Pull bracket (5) off of terminal posts of heating element (4).

(11) Remove heating element (4) and spacer (6) from inside of chamber.

(12) Remove one gasket (7) from each terminal post of heating element (4).

B. Installation

(1) Install one gasket (7, Figure 4-6) on each terminal post of heating element (4).

CAUTION
Hold heating element firmly in position while tightening nuts. Otherwise, damage to heating element or improper positioning of heating element may result. Also, spacer must remain above gaskets. If spacer is installed under gasket, leaking will result.

NOTE
Flat side of nut should be facing lockwasher.

(2) Install spacer (6) and heating element (4) on chamber wall and secure with bracket (5), two washers (3), lockwashers (2), and nuts (1).

(3) Connect four wires (6, Figure 4-5) to terminals of heating element (7).

(4) Taking care not to kink rod (4), flex rod and insert it into rocker bracket (5).

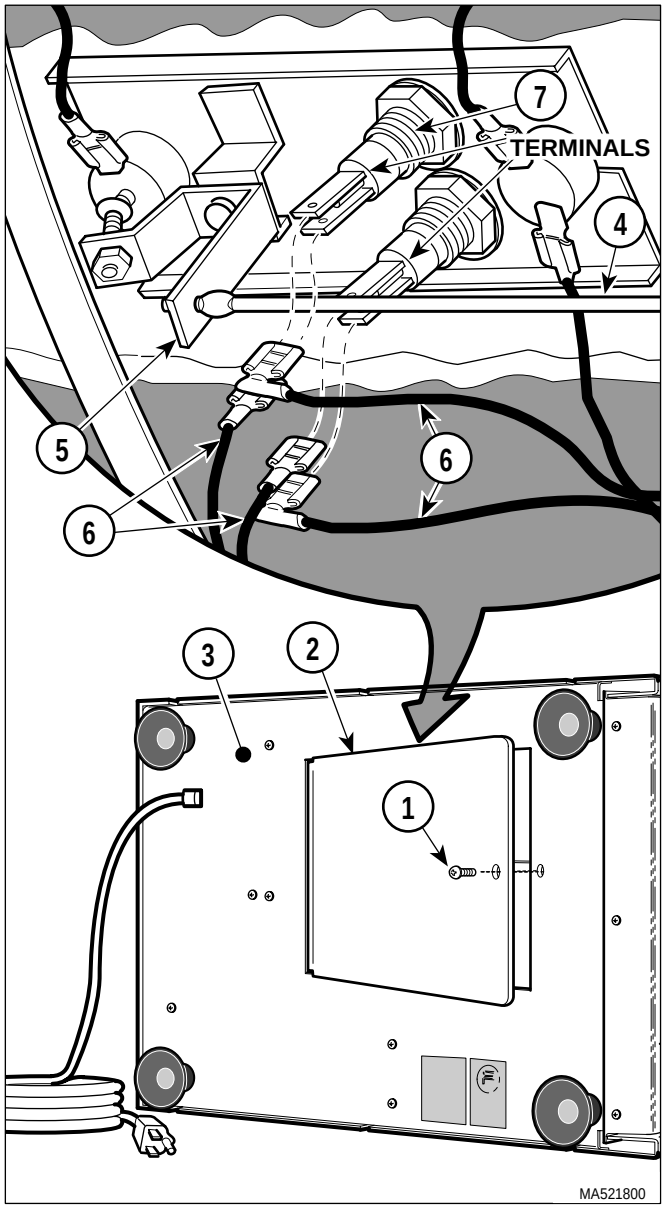

Figure 4-5. Inspection Cover Removal / Installation

(5) Install inspection cover (2) on base (3) and secure with screw (1).

(6) Turn unit upright.

(7) Install wire rack and trays (Refer to para 4.17).

(9) Connect power cord to wall outlet.

(10) Fill condensing tank with distilled or demineralized water.

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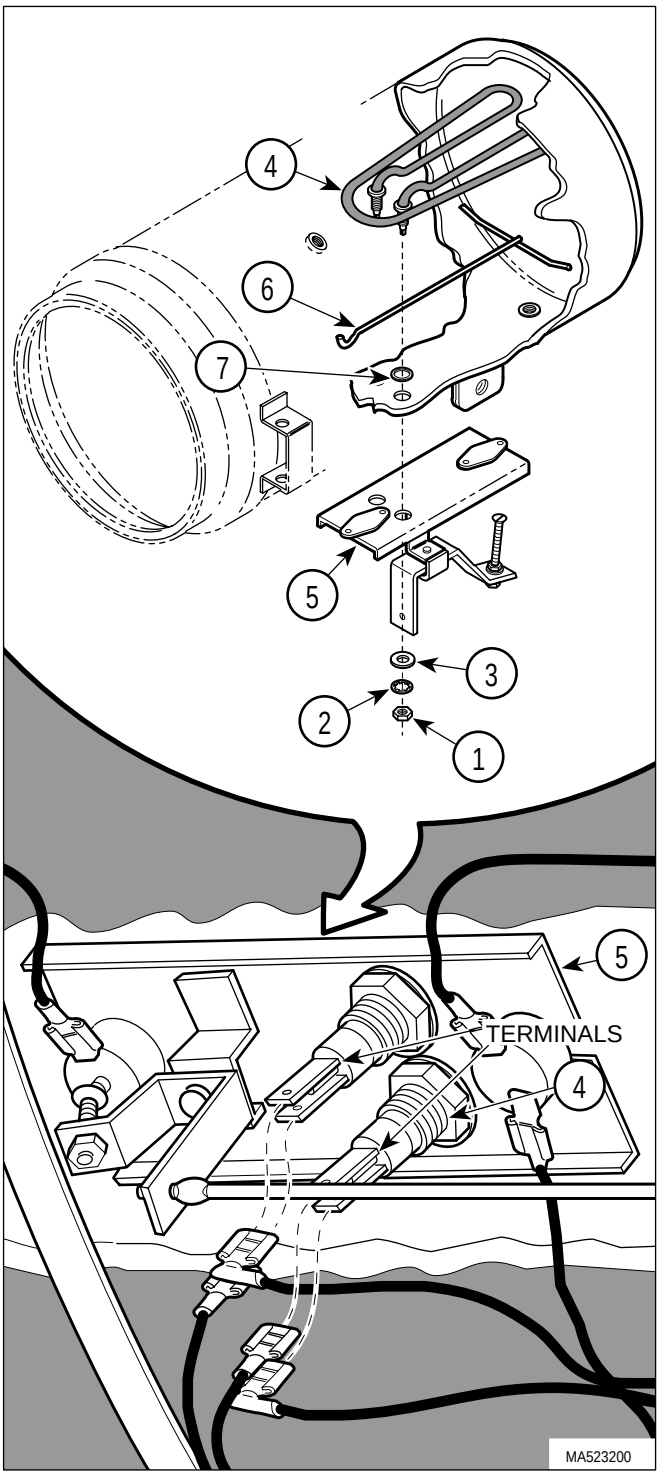

Figure 4-6. Heating Element Removal / Installation

4.7 Overheat Thermostat Removal / Installation

A. Removal

DANGER
Always unplug the power cord from the wall outlet before removing any of the sterilizers cover / panels or making any repairs to prevent the possibility of electrical shock. Failure to comply with these instructions could result in severe personal injury or death.

(1) Disconnect power cord from wall outlet.

(2) Drain all water from condensing tank.

(3) Remove wire rack and trays (Refer to para 4.17).

(4) Lay unit onto its side.

(5) Remove screw (1, Figure 4-7) and inspection cover (2) from base (3).

(6) Taking care not to kink rod (4), flex rod and remove it from rocker bracket (5).

(7) If removing manual reset overheat thermostat (7A), tag and disconnect two wires (6A) from terminals of overheat thermostat (7A).

If removing auto-reset overheat thermostat (7B), tag and disconnect two wires (6B) from terminals of overheat thermostat (7B).

(8) Loosen two nuts (8) and partially separate bracket (9) from chamber wall (10).

(9) Remove overheat thermostat (7A or 7B) from bracket (9).

B. Installation

(1) Install manual reset overheat thermostat (7A) or auto-reset overheat thermostat (7B) on bracket (9).

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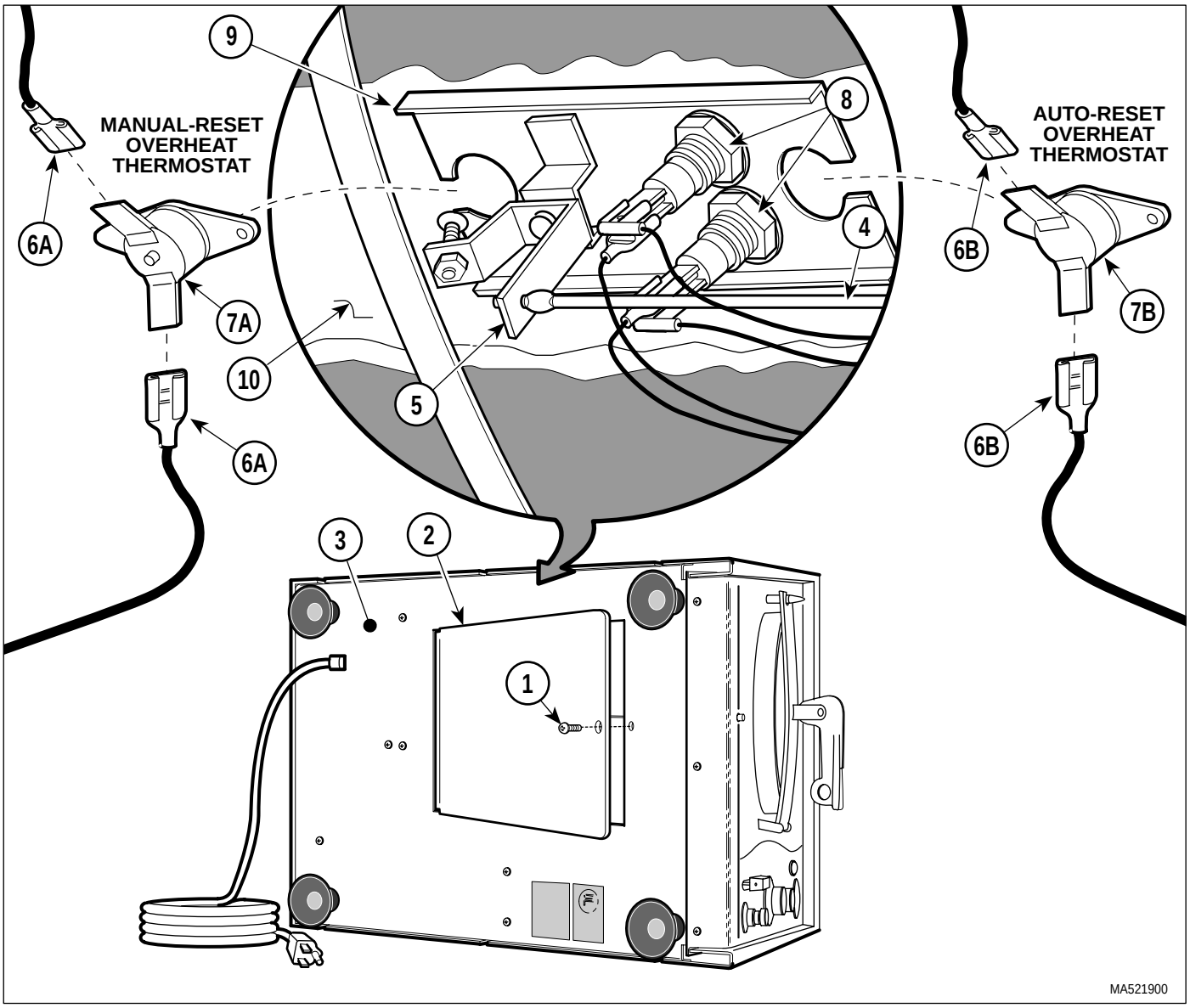

Figure 4-7. Overheat Thermostat Removal / Installation

CAUTION

Hold heating element firmly in position while tightening nuts. Otherwise, damage to heating element or improper positioning of heating element may result. Also, spacer must remain above gaskets. If spacer is installed under gasket, leaking will result.

(2) Position bracket (9) on chamber wall (10) and secure by tightening two nuts (8), making sure spacer (inside of chamber) is positioned under heating element properly.

(3) Connect two wires (6A) to terminals of manual reset overheat thermostat (7A) ***or*** connect two wires (6B) to terminals of auto-reset overheat thermostat (7B).

(4) Taking care not to kink rod (4), flex rod and insert it into rocker bracket (5).

(5) Install inspection cover (2) on base (3) and secure with screw (1).

(6) Turn unit upright.

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(7) Install wire rack and trays (Refer to para 4.17).

(8) Connect power cord to wall outlet.

(9) Fill condensing tank with distilled or demineralized water.

4.8 Temperature Regulator Relay Removal / Installation

A. Removal

(1) Remove cover assembly (Refer to para 4.2).

(2) Remove setscrew (1, Figure 4-8) from hub of flexible shaft assembly (2).

(3) Rotate TEMPERATURE REGULATOR knob in a counterclockwise direction until the flexible shaft assembly (2) is unscrewed from temperature regulator relay (3).

(4) Tag and disconnect one wire (4) from the timer assembly (5) and one wire (6) from the heating element (7).

(5) Remove screw (8), timer buzzer (9), screw (10), screw (11), temperature regulator relay (3), and relay spacer (12) from relay bracket (13).

B. Installation

NOTE
Screw (11) is used for adjustment and will be installed later.

(1) Install relay spacer (12), temperature regulator relay (3), and timer buzzer (9) on relay bracket (13) and secure with screw (8); then install screw (10). Do not install screw (11) at this time.

(2) Connect one wire (6) to terminal of heating element (7) and one wire (4) to terminal of timer assembly (5).

(3) Adjust setscrew (14) until it is flush with relay bracket (13).

(4) Coat threaded end of flexible shaft assembly (2) with high temperature grease.

(5) Screw threaded end of flexible shaft assembly (2) into temperature regulator relay (3) by turning TEMPERATURE REGULATOR knob in clockwise direction. Keep rotating TEMPERATURE REGULATOR knob in clockwise direction until flexible shaft assembly is screwed in as far as possible.

(6) Rotate TEMPERATURE REGULATOR knob $1^1/_2$ turns in a counterclockwise direction.

(7) Install setscrew (1) in hub of flexible shaft assembly (2).

(8) Rotate TEMPERATURE REGULATOR knob in a counterclockwise direction until it hits the setscrew stop.

(9) Making sure TEMPERATURE REGULATOR knob is held against setscrew stop, loosen setscrew (15) in TEMPERATURE REGULATOR knob. Rotate TEMPERATURE REGULATOR knob until white index mark is at the 9:00 o'clock position, then tighten setscrew (15).

(10) Depress the FILL / VENT lever and allow the water to fill the chamber until the water level is within 1/2 - 5/8 in. (13 - 16 mm) from the front rim of the chamber; then release the lever.

DANGER
The following steps require the unit to be powered up with the cover assembly removed. Use extreme care to prevent contact with exposed terminals and chamber components. Failure to do so could result in electrical shock or burns which could cause serious personal injury or death.

(11) Plug the power cord into wall outlet.

(12) Close and latch the door of the chamber.

(13) Set the TIMER knob to its maximum setting of 30 minutes.

(14) Unscrew setscrew (14) 2 to 3 turns.

NOTE
Wait until chamber temperature reaches its maximum temperature before attempting to adjust screw.

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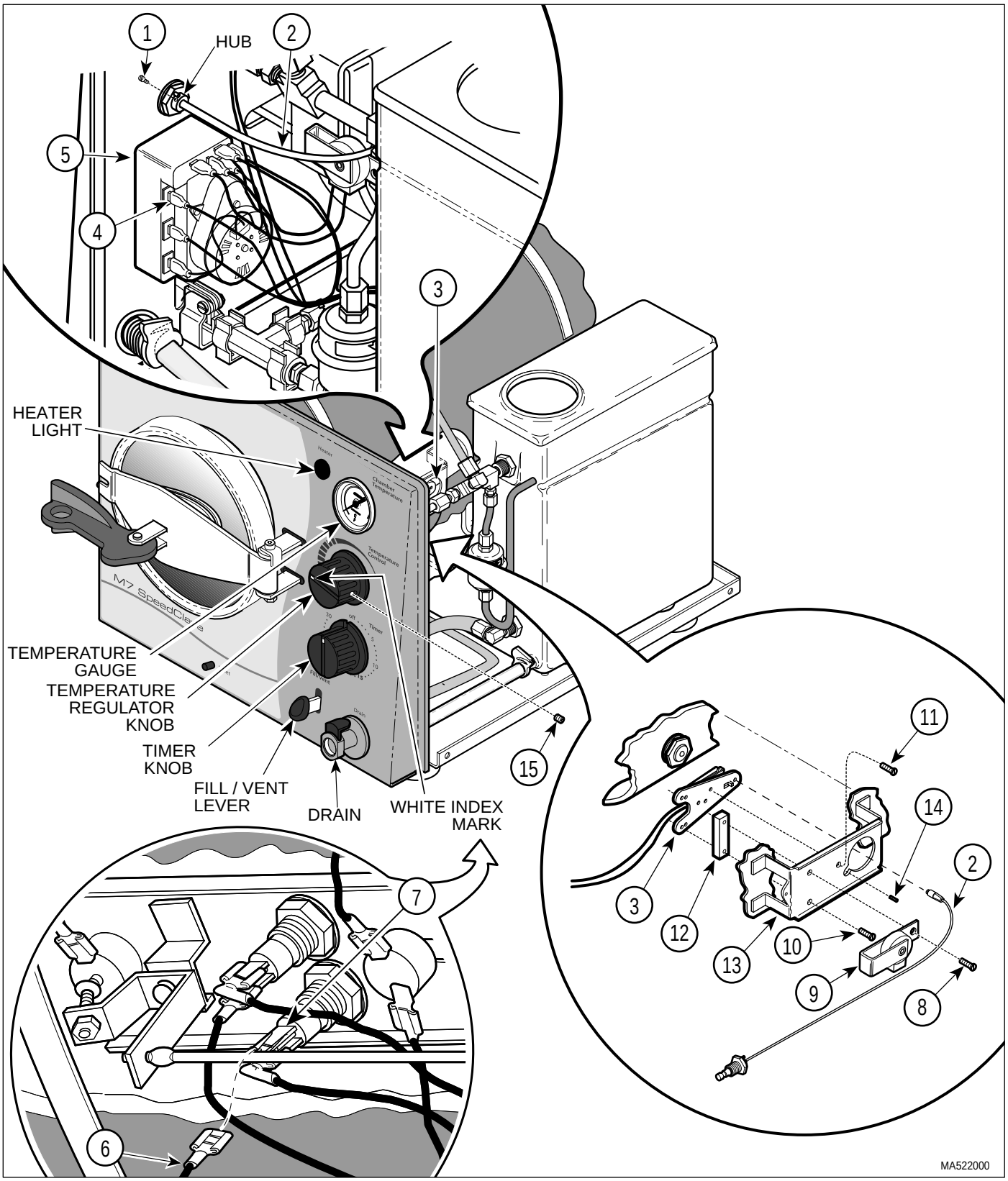

Figure 4-8. Temperature Regulator Relay Removal / Installation

(15) Install screw (11). Adjust screw until TEMPERATURE gauge reads slightly above 270 °F (132 °C).

NOTE
Setscrew provides fine tuning of temperature adjustment.

(16) Adjust setscrew (14) until TEMPERATURE gauge reads 270 - 271 °F (131.6 - 132.8 °C).

(17) After adjustment is satisfactory, turn TIMER knob to off and vent the chamber.

(18) Install cover assembly (Refer to para 4.2).

4.9 Temperature Regulator Relay Adjustment

A. Removal

(1) Remove cover assembly (Refer to para 4.2).

(2) Remove setscrew (1, Figure 4-9) from hub of flexible shaft assembly (2).

(3) Remove screw (3).

(4) Adjust setscrew (4) until it is flush with relay bracket (5).

(5) Rotate TEMPERATURE REGULATOR knob in clockwise direction until flexible shaft assembly (2) is screwed in as far as possible.

(6) Rotate TEMPERATURE REGULATOR knob 1½ turns in a counterclockwise direction.

(7) Install setscrew (1) in hub of flexible shaft assembly (2).

(8) Rotate TEMPERATURE REGULATOR knob in a counterclockwise direction until it hits the setscrew stop.

(9) Making sure TEMPERATURE REGULATOR knob is held against stop, loosen setscrew (6) in TEMPERATURE REGULATOR knob. Rotate TEMPERATURE REGULATOR knob until white index mark is at the 6:00 o'clock position, then tighten setscrew (6).

(10) Depress the FILL / VENT lever and allow the water to fill the chamber until the water level is within 1/2 in. to 5/8 in. (13 - 16 mm) from the front rim of the chamber; then release the lever.

DANGER
The following steps require the unit to be powered up with the cover assembly removed. Use extreme care to prevent contact with exposed terminals and chamber components. Failure to do so could result in electrical shock or burns which could cause serious personal injury or death.

(11) Plug the power cord into wall outlet.

(12) Close and latch the door of the chamber.

(13) Set the TIMER knob to its maximum setting of 30 minutes.

(14) Unscrew setscrew (4) 2 to 3 turns.

NOTE
Wait until chamber temperature reaches its maximum temperature before attempting to adjust screw.

(15) Install screw (3). Adjust screw until TEMPERATURE gauge reads slightly above 270 °F (132 °C).

NOTE
Setscrew provides fine tuning of temperature adjustment.

(16) Adjust setscrew (4) until TEMPERATURE gauge reads 270 - 271 °F (131.6 - 132.8 °C).

(17) After adjustment is satisfactory, turn TIMER knob to off and vent the chamber.

(18) Install cover assembly (Refer to para 4.2).

4.10 Diaphragm Cup Removal / Installation

A. Removal

(1) Remove cover assembly (Refer to para 4.2).

(2) Remove wire rack and trays (Refer to para 4.17).

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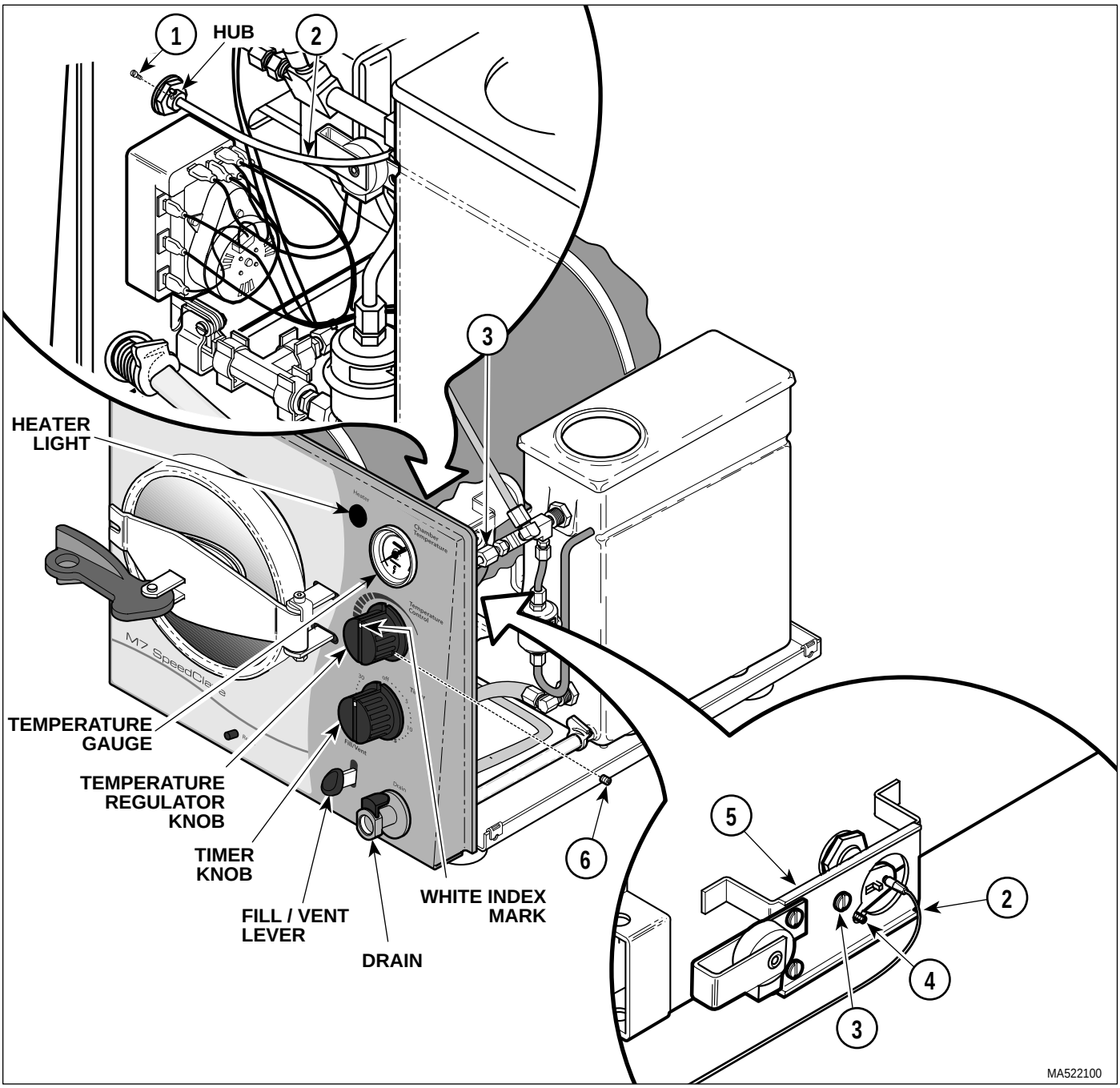

Figure 4-9. Temperature Regulator Relay Adjustment

(3) Remove temperature regulator relay (Refer to para 4.8).

(4) Remove nut (1, Figure 4-10), lockwasher (2), and diaphragm cup (3) from chamber wall (4).

(5) Remove gasket (5) from diaphragm cup (3).

B. Installation

(1) Install gasket (5) on diaphragm cup (3).

CAUTION
The lip of the nut must face toward the lockwasher.

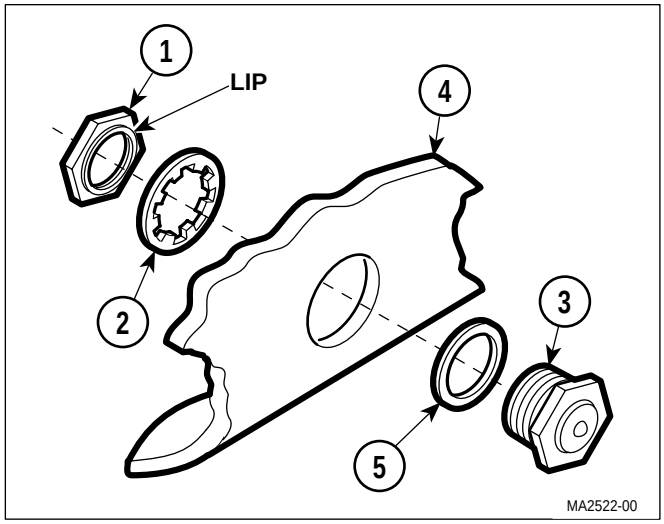

Figure 4-10. Diaphragm Cup Removal / Installation

(2) Install diaphragm cup (3) on chamber wall (4) and secure with lockwasher (2) and nut (1).

(3) Install wire rack and trays (Refer to para 4.17).

(4) Install temperature regulator relay (Refer to para 4.8).

(5) Install cover assembly (Refer to para 4.2).

4.11 Temperature Gauge Removal / Installation

A. Removal

(1) Remove cover assembly (Refer to para 4.2).

(2) Loosen nut (1, Figure 4-11) and slide retaining bar (2) away from front panel (3).

(3) While holding connector (4), loosen compression nut (5).

(4) Pull temperature gauge (6) out of connector (4).

(5) Remove thermometer sleeve (7), compression nut (5), nut (1), and retaining bar (2) from temperature gauge (6).

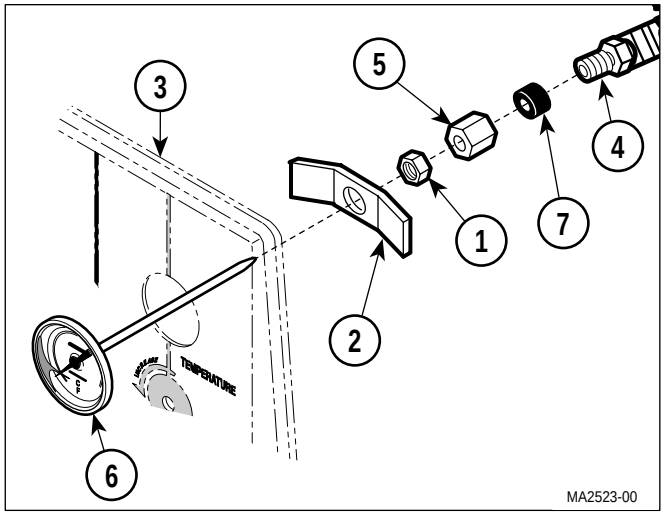

Figure 4-11. Temperature Gauge Removal / Installation

B. Installation

(1) Insert temperature gauge (6) thru hole in front panel (3); then install retaining bar (2), nut (1), compression nut (5), and thermometer sleeve (7) on temperature gauge (6).

(2) Making sure temperature gauge (6) is oriented properly so face of gauge can be read by operator, position temperature gauge (6) on front panel (3) and secure with retaining bar (2) and nut (1).

(3) Slide thermometer sleeve (7) against connector (4).

(4) Install compression nut (5) on connector (4). Tighten compression nut until thermometer sleeve protrudes slightly from back side of compression nut. Do not tighten any further.

(5) Install cover assembly (Refer to para 4.2).

4.12 Pressure Relief Valve Removal / Installation

A. Removal

(1) Remove cover assembly (Refer to para 4.2).

NOTE
There may be a strip of tape holding the tank cover on to prevent the tank cover from vibrating and making noise.

(2) Remove tank cover (1, Figure 4-12) from tank assembly (2).

(3) Remove pressure relief valve (3) from bulkhead fitting (4).

B. Installation

(1) Coat threads of pressure relief valve (3) with Teflon tape / sealant.

(2) Install pressure relief valve (3) on bulkhead fitting (4).

(3) Install tank cover (1) on tank assembly (2).

(4) Install cover assembly (Refer to para 4.2).

NOTE
The pressure relief valve is designed to open at 31 psi / 275 °F (135 °C).

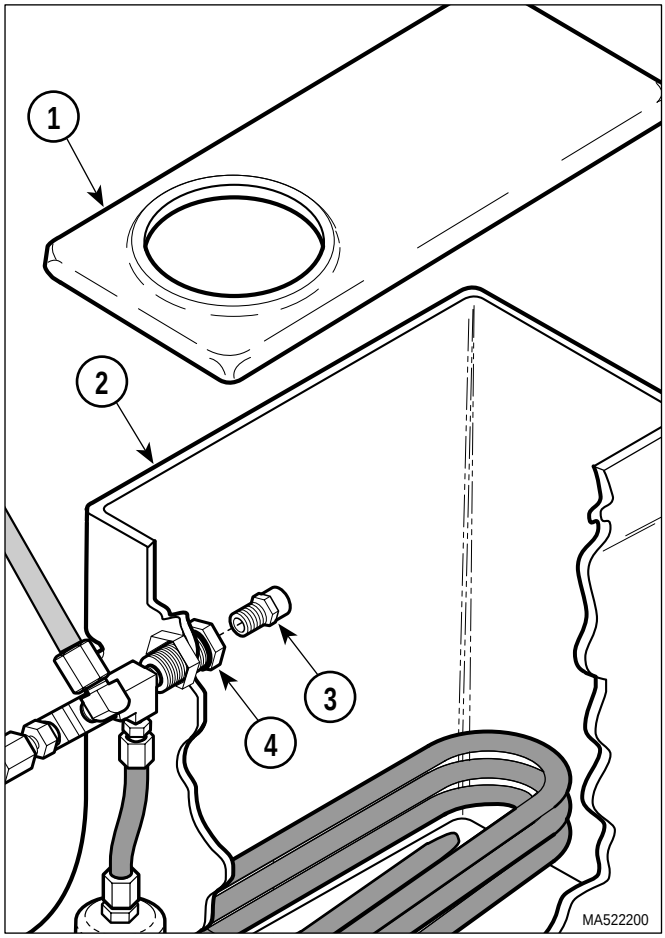

Figure 4-12. Pressure Relief Valve Removal / Installation

(5) With the TEMPERATURE REGULATOR knob set to its maximum setting, run a cycle. The temperature should reach normal maximum pressure / temperature of 27 psi / 270 °F (132 °C). If not, it indicates that the pressure relief valve is opening too early.

4.13 Bellows Assembly Removal Installation

A. Removal

(1) Remove cover assembly (Refer to para 4.2).

DANGER
Make sure unit has vented and cooled before attempting to make repairs. Failure to do so could result in serious injury or burns.

(2) Using a wrench on bellows nuts, hold bellows assembly (1, Figure 4-13) stationary; then loosen and disconnect compression nuts (2 and 3).

(3) Remove bellows assembly (1) from tubes (4).

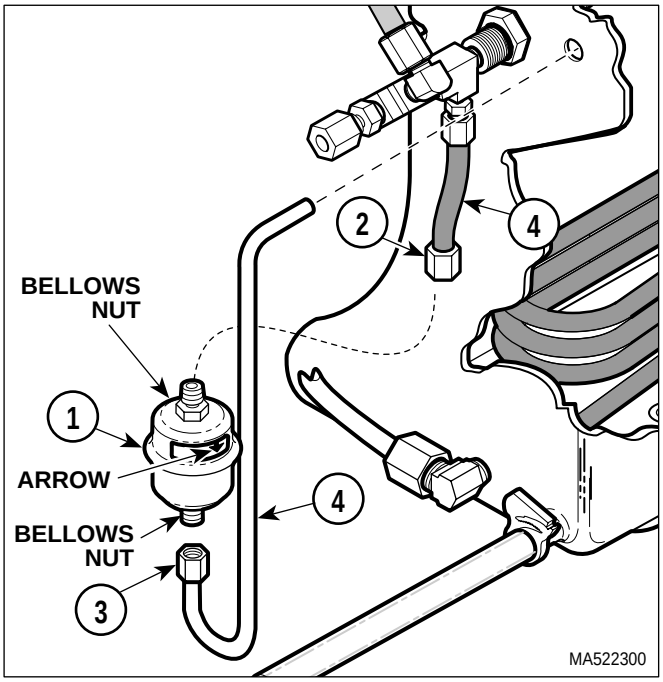

Figure 4-13. Bellows Assembly Removal / Installation

B. Installation

(1) Position bellows assembly (1) on tubes (4), making sure flow arrow is pointing toward compression nut (3).

(2) Using a wrench on bellows nuts to hold bellows assembly (1) stationary, screw compression nuts (2 and 3) onto bellows assembly.

(3) Install cover assembly (Refer to para 4.2).

4.14 Fill / Vent Valve Removal / Installation

A. Removal

(1) Drain all water from condensing tank.

(1) Remove cover assembly (Refer to para 4.2).

DANGER
Make sure unit has vented and cooled before attempting to make repairs. Failure to do so could result in serious injury or burns.

(2) Loosen and disconnect two compression nuts (1, Figure 4-14) from fittings of fill / vent valve assembly (2).

(3) Disengage closing bracket of fill / vent valve assembly (2) from fill / vent lever (3) by lifting up on back end of fill / vent valve assembly first and then pulling it out of brackets (4).

B. Disassembly

(1) Remove fitting (1, Figure 4-15) from valve body (2).

(2) While holding nut (3) stationary, unscrew closing bracket (4) from plunger (5).

(3) Remove nut (3) and spring (6) from plunger (5).

(4) Push plunger (5) out of valve body (2).

(5) Remove two o-rings (7 and 8) from plunger (5).

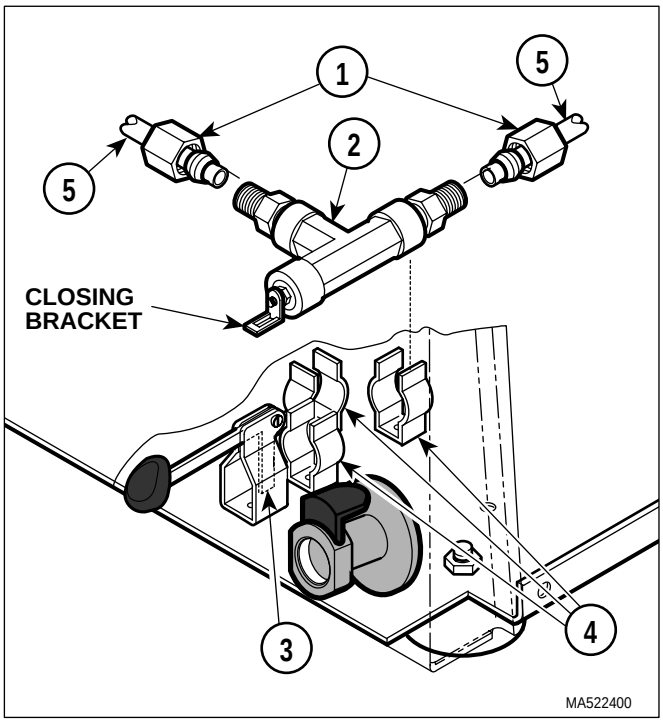

Figure 4-14. Fill / Vent Valve Removal / Installation

C. Assembly

(1) Flush all foreign matter out of valve body (2) and off of all components with water.

(2) Coat o-rings (7 and 8) with high temperature lubricant.

(3) Install o-rings (7 and 8) on plunger (5).

(4) Insert plunger (5) into valve body (2).

(5) Install spring (6), nut (3), and closing bracket (4) on plunger (5).

NOTE
The back side of the plunger has a screwdriver slot to assist in adjusting the closing bracket and nut.

(6) Adjust closing bracket (4) until Distance A is approximately 3/16 to 1/4 in. (0.47 to 0.63 cm). Secure closing bracket in position by tightening nut (3) against closing bracket.

(7) Coat threads of fitting (1) with Teflon tape / sealant.

(8) Install fitting (1) on valve body (2).

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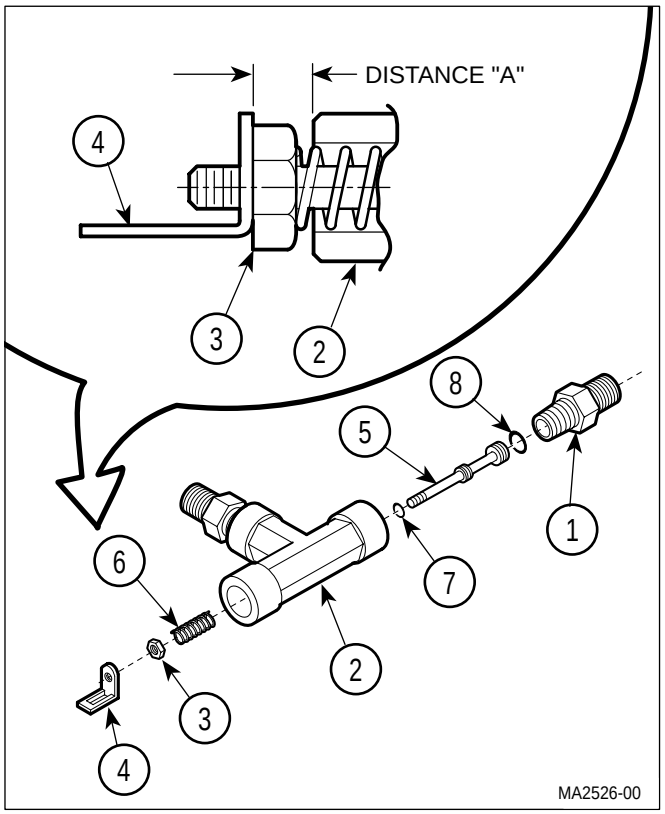

Figure 4-15. Fill / Vent Valve Disassembly / Assembly

D. Installation

(1) Install fill / vent valve assembly (2, Figure 4-18) in brackets (4), making sure fill / vent lever (3) is inserted in slot of closing bracket.

(2) Position tubes (5) and screw compression nuts (1) onto fittings of fill / vent valve assembly (2).

(3) Install cover assembly (Refer to para 4.2).

(4) Test operation of fill / vent valve. If water will not flow or flows very slowly when fill / vent lever is depressed, lengthen Distance A slightly. See Figure 4-15.

4.15 Door Assembly Removal / Installation

A. Removal

DANGER
Make sure unit is vented and cool before attempting to make repairs. Failure to do so could result in serious injury or burns.

(1) Open door handle (1, Figure 4-16) to the unlatched position.

(2) Remove torque nut (2), screw (3), door stop (4), and door assembly (5) from hinge (6).

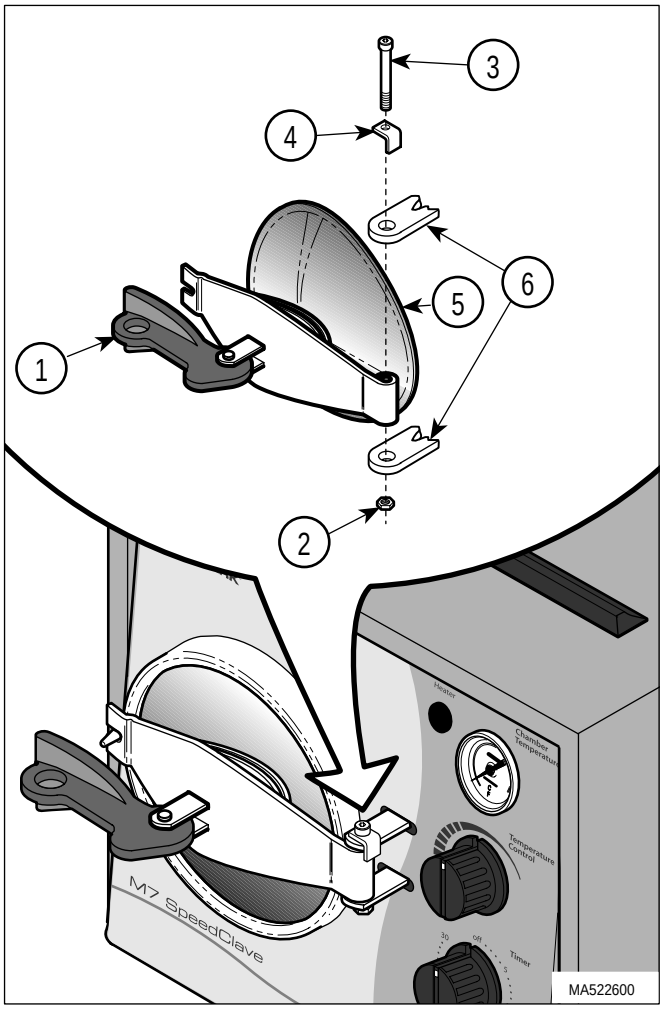

Figure 4-16. Door Assembly Removal / Installation

B. Disassembly

NOTE
Washer (2, Figure 4-17) is held on by removable threadlocking adhesive (Loctite 242) and may be difficult to remove. Pull on door to dislodge washer.

(1) Remove cap nut (1, Figure 4-17), washer (2), and door (3) from T-bolt (4).

(2) Remove short spring (5) and long spring (6) from T-bolt (4).

(3) Remove push nut (7), pin (8), handle (9), and door cross arm (10) from U-bracket (11).

(4) Remove T-bolt (4) from U-bracket (11).

C. Assembly

(1) Install T-bolt (4) into U-bracket (11).

(2) Coat bottom face of washer (2) and threads of T-bolt (4) with removable threadlocking adhesive.

NOTE
Door must be installed so that bowed portions of door are on top and bottom; not on the sides.

It may be necessary to place U-bracket in vise in order to tighten cap nut.

(3) Install long spring (6), short spring (5), and door (3) on T-bolt (4) and secure with washer (2) and cap nut (1).

(4) Install door cross arm (10) and handle (9) on U-bracket (11) and secure with pin (8) and push nut (7).

D. Installation

(1) Coat threads of torque nut (2, Figure 4-16) with removable threadlocking adhesive (Loctite 242).

NOTE
Do not overtighten torque nut or door assembly may be hard to open and close.

(2) Install door assembly (5) on hinge (6) and secure with door stop (4), screw (3), and torque nut (2).

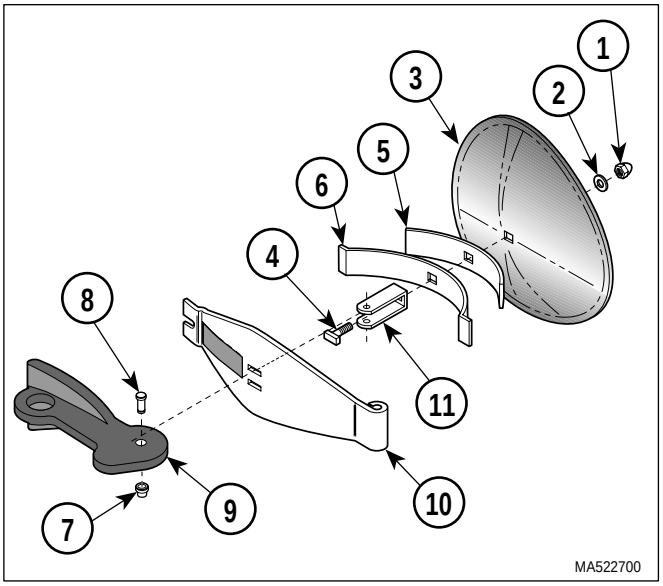

Figure 4-17. Door Assembly Disassembly / Assembly

4.16 Door Gasket Removal / Installation

A. Removal

DANGER
Make sure unit is vented and cool before attempting to make repairs. Failure to do so could result in serious injury or burns.

(1) Open the door assembly.

(2) Pry door gasket (1, Figure 4-18) out of gasket channel of chamber (2).

B. Installation

(1) Using a hard bristle brush, clean all foreign matter from gasket channel of chamber (2).

(2) Lubricate door gasket (1) and gasket channel of chamber with soapy water or liquid detergent.

(3) Using fingers, push door gasket (1) into gasket channel of chamber (2).

(4) Run a cycle to seat door gasket. Refer to Operator Manual if necessary.

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SECTION IV
MAINTENANCE / SERVICE

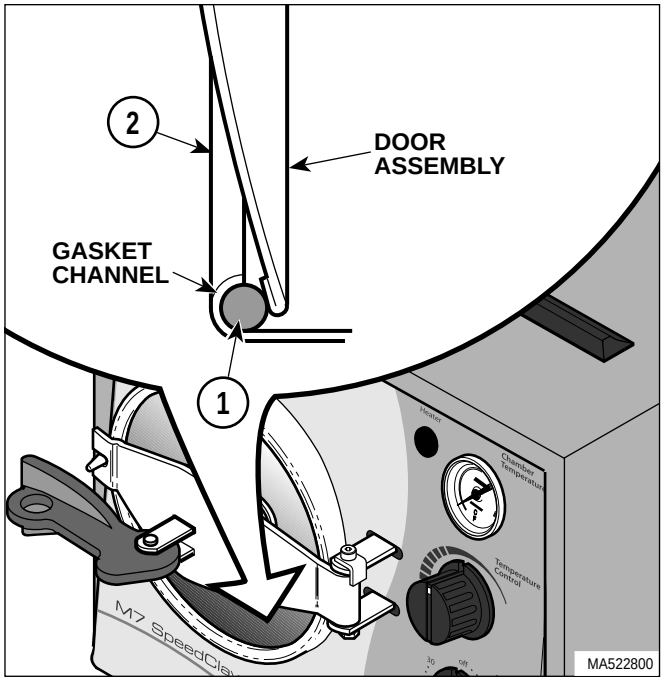

Figure 4-18. Door Gasket Removal / Installation

4.17 Wire Rack And Tray Plate Removal / Installation

A. Removal

DANGER
Make sure unit is vented and cool before attempting to make repairs. Failure to do so could result in serious injury or burns.

(1) Remove trays from chamber.

(2) Lift up on left edge of tray plate (1, Figure 4-19) until tray plate "pops" free of wire rack (2).

(3) Hold tray plate (1) in a vertical position, and remove from chamber.

(4) Gently squeeze bottom of wire rack (2) together and remove from chamber.

B. Installation

NOTE
Be sure to install the wire rack so that the straight ends of the rack are on the right side of the chamber, and the offset ends of the rack are on the left side of the chamber (see Figure 4-19).

(1) Gently squeeze bottom of wire rack (2) together and insert into chamber, pushing rack in as far as it will go.

(2) Hold the tray plate (1) in a vertical position with the right side of the tray plate down; then insert it into the chamber.

(3) Place right side of tray plate (1) under the bottom wire of rack (2) so that straight ends of rack align with notches (A) of tray plate.

NOTE
When performing the following step, it may be necessary to spread wire rack open slightly to engage offset ends of rack with notches (B) of tray plate.

(4) Holding the right side of tray plate (1) under bottom wire of rack (2), push left side of tray plate (1) down until offset ends of rack engage with notches (B) of tray plate.

4.18 Condensing Tank Removal / Installation

A. Removal

DANGER
Make sure unit has vented and cooled before attempting to make repairs. Failure to do so could result in serious injury or burns.

(1) Remove cover assembly (Refer to para 4.2).

(2) Drain all water from tank assembly (1, Figure 4-20); then remove tank lid (2).

(3) Loosen nut (3); then unscrew bulkhead fitting / pressure relief assembly (4) from tee fitting (5).

(4) Remove nut (3), bulkhead fitting / pressure relief assembly (4), and neoprene washer (6) from tank assembly (1).

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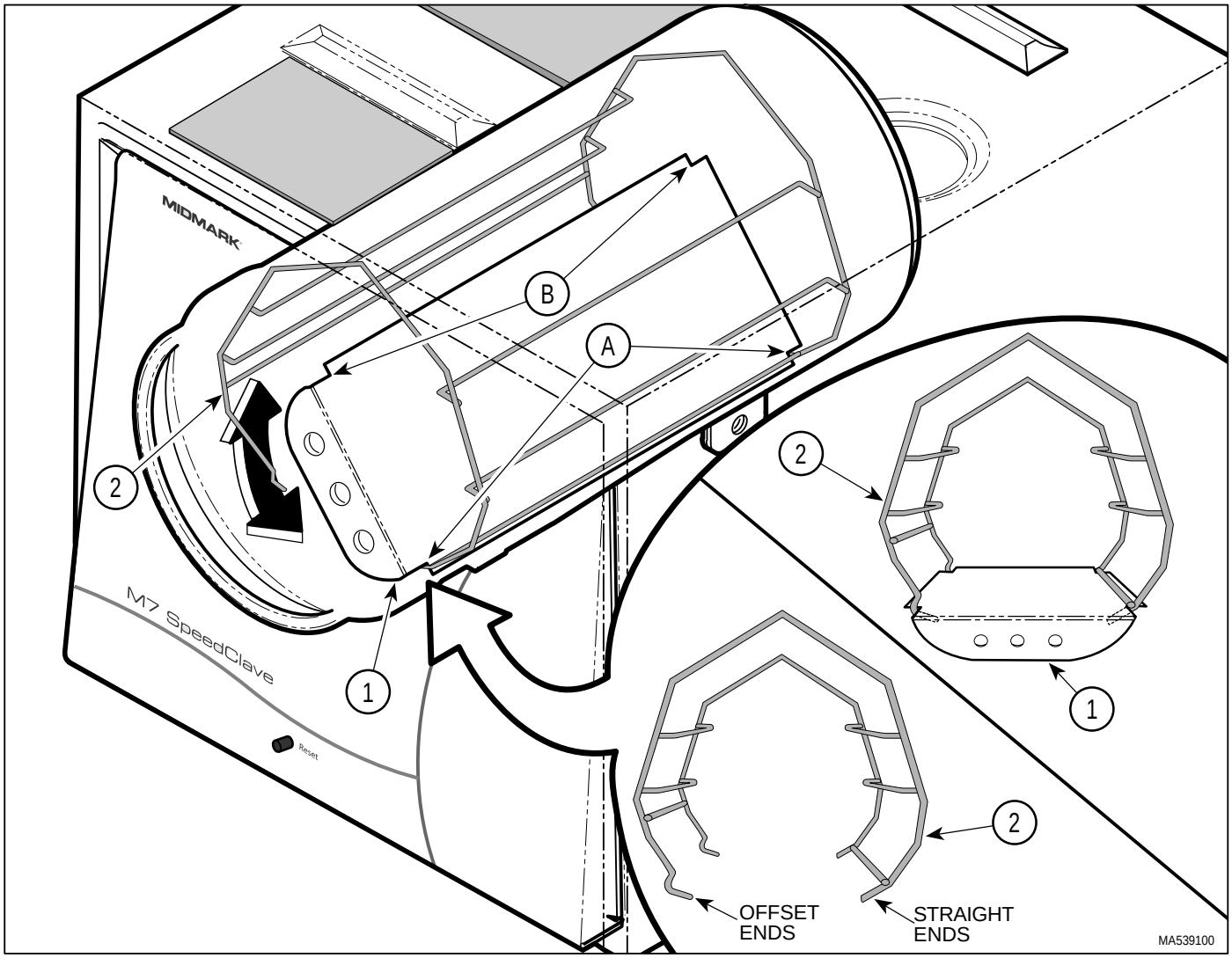

Figure 4-19. Wire Rack And Tray Plate Removal / Installation

(5) Release hose clamp (7) and remove drain tube (8) from tank assembly (1).

(6) Loosen compression nut (9).

(7) Lay unit on its side.

(8) Remove four screws (10); then separate copper tubing (11) from elbow fitting (12).

(9) Stand unit upright.

(10) Remove copper tubing (13) from tank assembly (1); then remove tank assembly.

(11) Remove elbow fitting (12), nut (14), condensing coil assembly (15) and washer (16) from tank (1).

B. Installation

(1) Install washer (16) on fitting end of condensing coil assembly (15) and install condensing coil assembly in tank (1).

(2) Insert fitting end of condensing coil assembly (15) thru hole (A) in tank (1) and secure with nut (14).

(3) Coat threads of elbow fitting (12), and tee fitting (5) with Teflon tape / sealant.

(4) Install elbow fitting (12) into fitting end of condensing coil (15).

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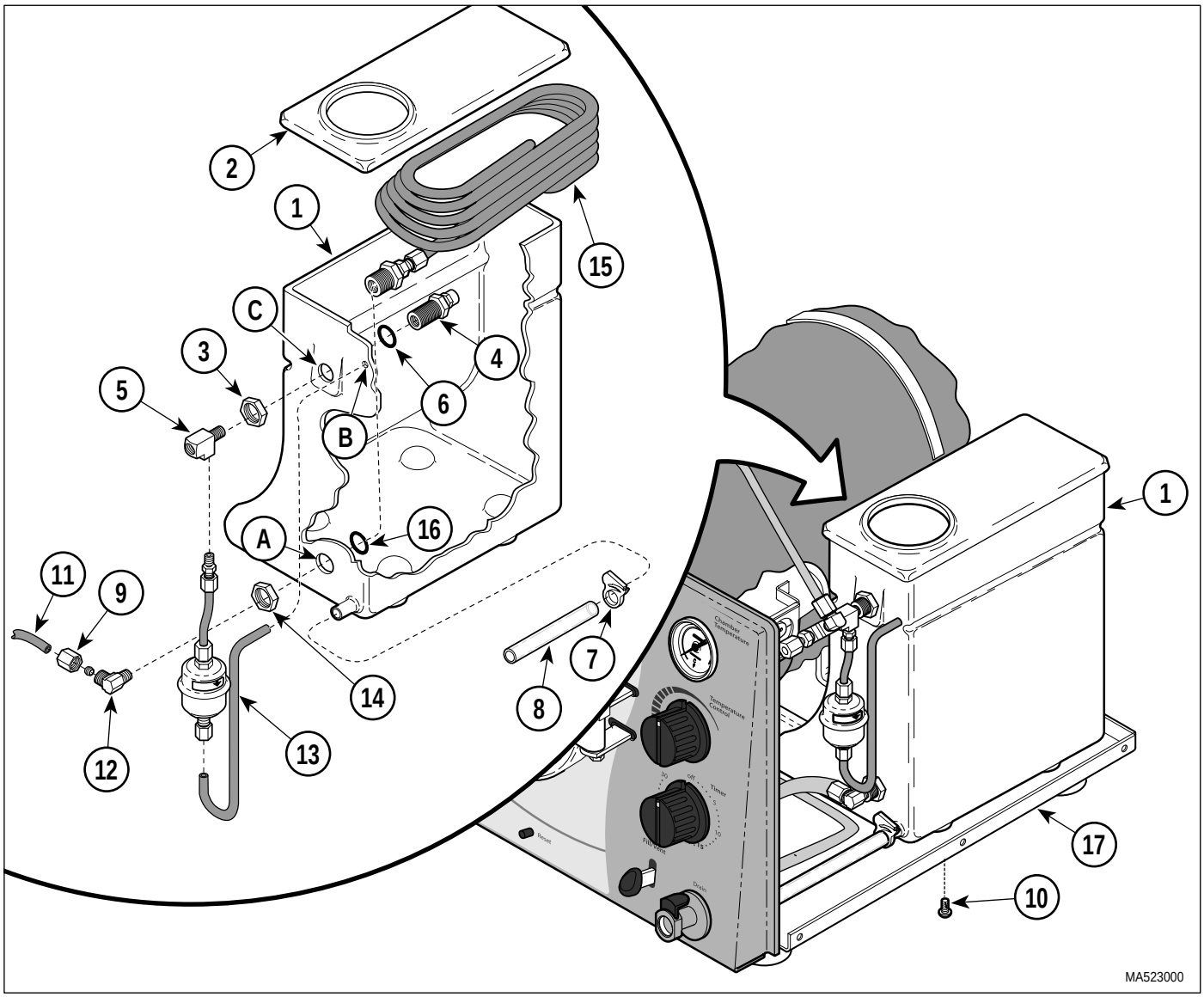

Figure 4-20. Condensing Tank Removal / Installation

(5) Insert copper tubing (11) into elbow fitting (12) and secure with compression nut (9).

(6) Insert copper tubing (13) thru hole (B) in tank assembly (1).

(7) Lay unit on its side.

(8) Secure tank assembly (1) to base (17) with four screws (10).

(9) Stand unit upright.

(10) Install neoprene washer (6) on bulkhead fitting / pressure relief assembly (4) and partially insert thru hole (C) in tank assembly (1); then thread nut (3) onto bulkhead fitting / pressure relief assembly.

(11) Hold tee fitting (5) with a wrench; then thread bulkhead fitting / pressure relief assembly (4) onto tee fitting by tightening from inside of tank (1).

(12) Attach drain tube (8) to tank assembly (1) and secure with hose clamp (7).

NOTE
Check that all fittings are tight before installing cover assembly.

(13) Install cover assembly (Refer to para 4.2).

(14) Fill tank assembly with distilled or demineralized water.

4.19 Chamber Assembly Removal / Installation

A. Removal

(1) Remove cover assembly (Refer to para 4.2).

(2) Remove door assembly (Refer to para 4.15).

(3) Remove door gasket (Refer to para 4.16).

(4) Drain water from condensing tank.

(5) Remove wire rack and trays (Refer to para 4.17).

(6) Remove timer buzzer (Refer to para 4.4).

(6) Remove temperature regulator relay (Refer to para 4.8).

(7) Remove diaphragm cup (Refer to para 4.10).

(8) Remove heating element (Refer to para 4.6).

(9) Remove two overheat thermostats (Refer to para 4.7).

(10) Loosen and disconnect compression nut (1, Figure 4-21) from male fitting (2).

(11) Loosen and disconnect compression nut (3) from elbow fitting (4).

(12) Remove two screws (5) and chamber assembly (6) from base (7).

(13) Disconnect and remove one banding strap (1, Figure 4-22) and two banding straps (2) from insulation (3).

(14) Remove insulation (3) from chamber (4).

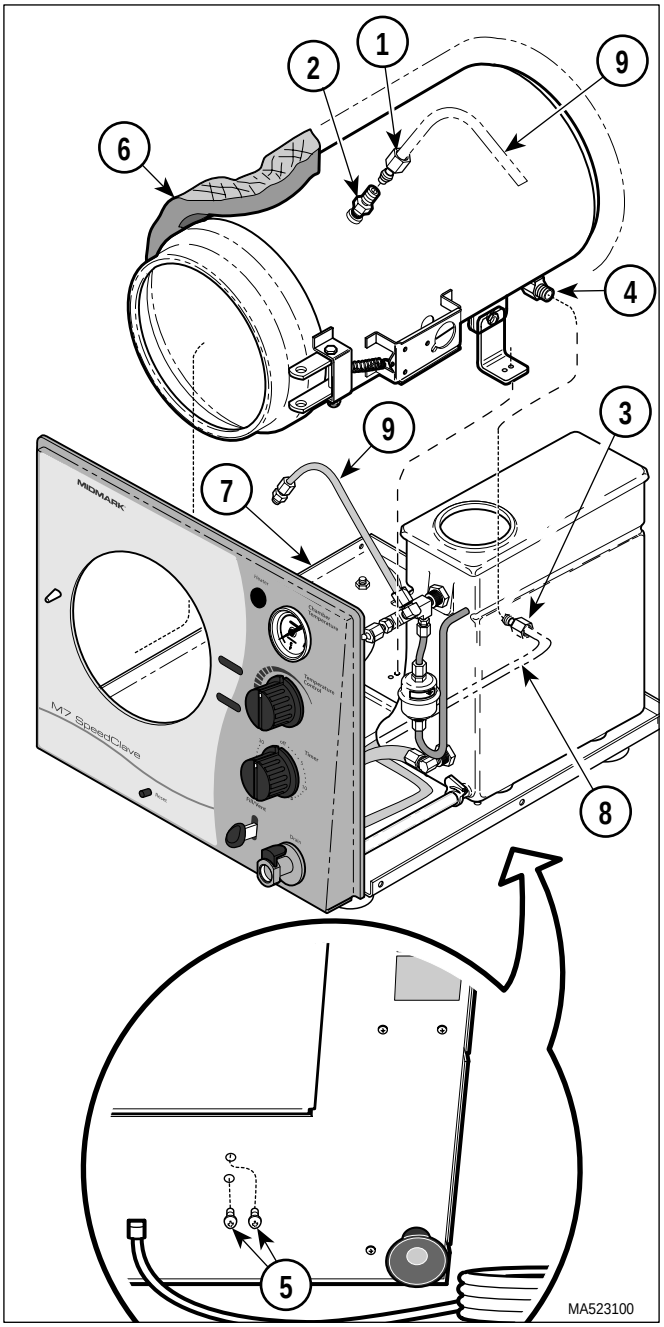

Figure 4-21. Chamber Assembly Removal / Installation

(15) Remove nut (5), screw (6), and chamber leg bracket (7) from chamber (4).

(16) Remove elbow fitting (8) from chamber (4).

(17) Remove male fitting (9) from chamber (4).

(18) Disconnect spring (10) from spring holes.

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(19) Remove nut (11), screw (12), hinge (13), and washer (14) from door bracket of chamber (4).

B. Installation

(1) Coat threads of nut (11, Figure 4-22) with removable threadlocking adhesive (Loctite 242).

(2) Install washer (14), and hinge (13) on door bracket of chamber (4) and secure with screw (12) and nut (11).

(3) Insert ends of spring (10) into spring holes.

(4) Coat threads of fittings (8 and 9) with Teflon tape / sealant.

(5) Install male fitting (9) and elbow fitting (8) on chamber (4).

(6) Install chamber leg bracket (7) on chamber (4) and secure with screw (6) and nut (5).

(7) Install insulation (3) on chamber (4). Secure insulation on chamber with two banding straps (2) and banding strap (1).

(8) Install chamber assembly (6, Figure 4-21) on base (7) and secure with two screws (5).

NOTE
If compression sleeves are too deformed to be reused, remove old compression sleeves and replace with new ones.

(9) Connect tube (8) to elbow fitting (4) and secure with compression nut (3).

(10) Connect tube (9) to male fitting (2) and secure with compression nut (1).

(11) Install overheat thermostat (Refer to para 4.7).

(12) Install heating element (Refer to para 4.6).

(13) Install diaphragm cup (Refer to para 4.10).

(14) Install wire rack and trays (Refer to para 4.17).

(15) Install door assembly (Refer to para 4.15).

(16) Install door gasket (Refer to para 4.16).

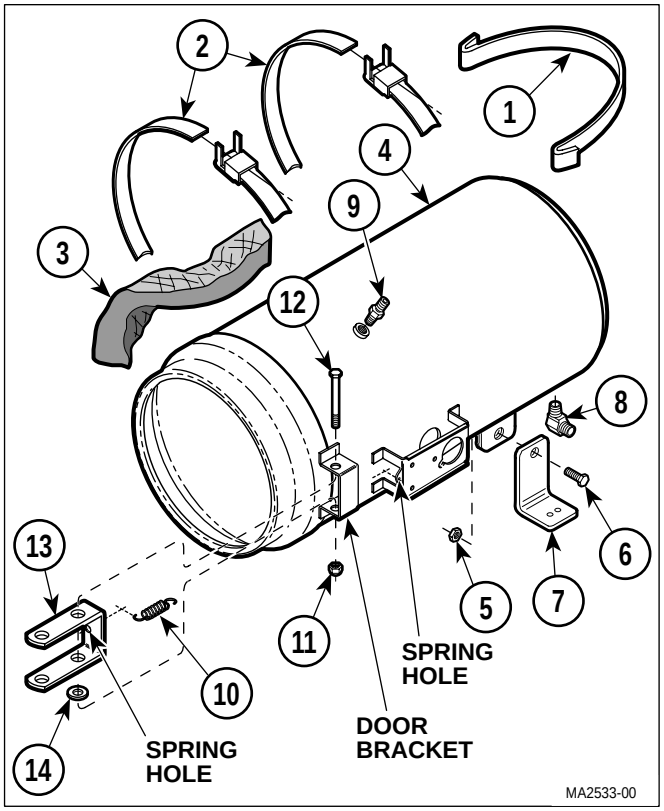

Figure 4-22. Chamber Assembly Disassembly / Assembly

(17) Fill condensing tank with distilled or demineralized water.

(18) Install temperature regulator relay (Refer to para 4.8).

SECTION V
SCHEMATICS AND DIAGRAMS

5.1 Electrical Schematics / Wiring Diagrams

Figure 5-1, sheets 1 and 2 illustrate the current flow between electrical components in the M7. Figure 5-2, sheets 1 and 2 illustrate the wiring connections for the sterilizer.

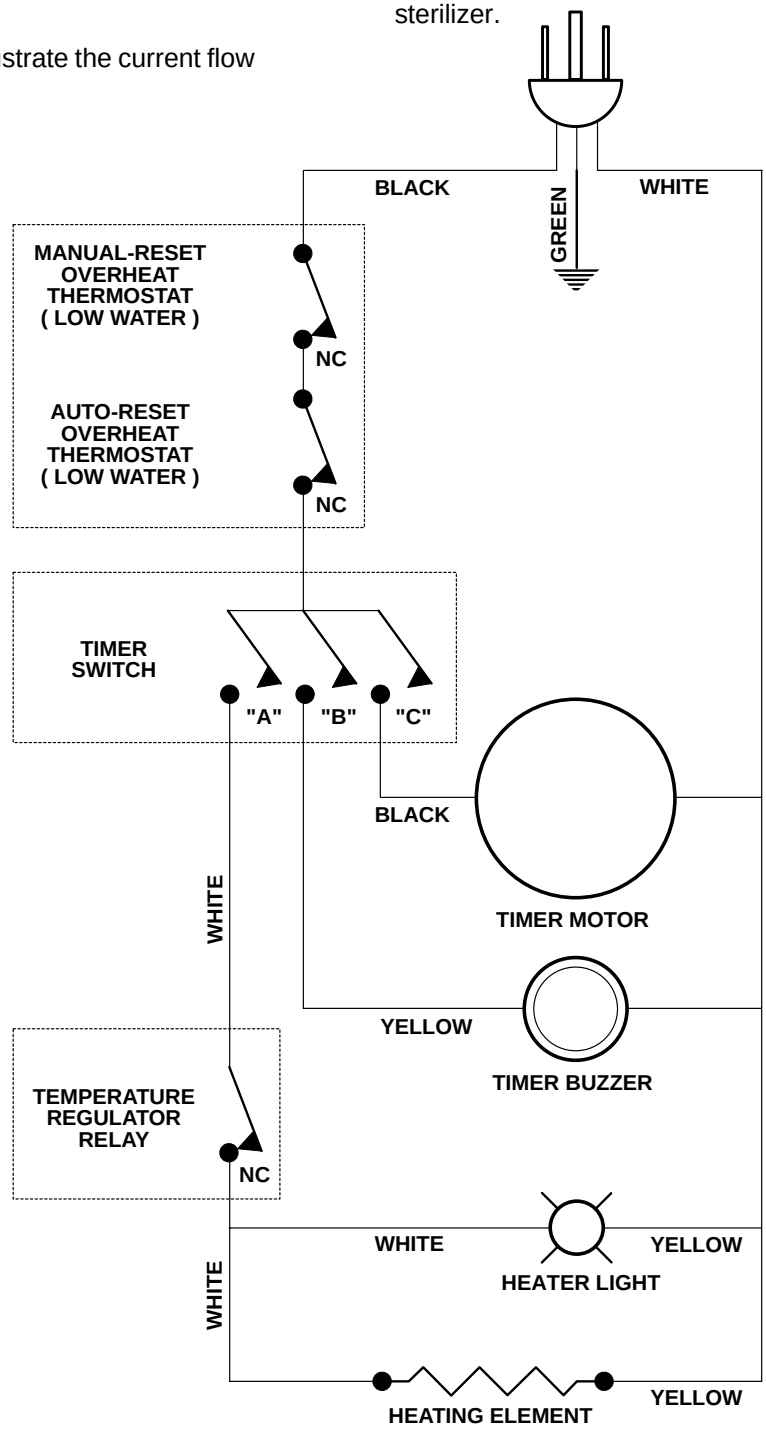

Figure 5-1 (Sheet 1 of 2). Electrical Schematic - Units With Serial Numbers MH1000 thru Present, MK1000 thru Present, ML1000 thru Present, and MM1000 thru Present.

SECTION V
SCHEMATICS AND DIAGRAMS

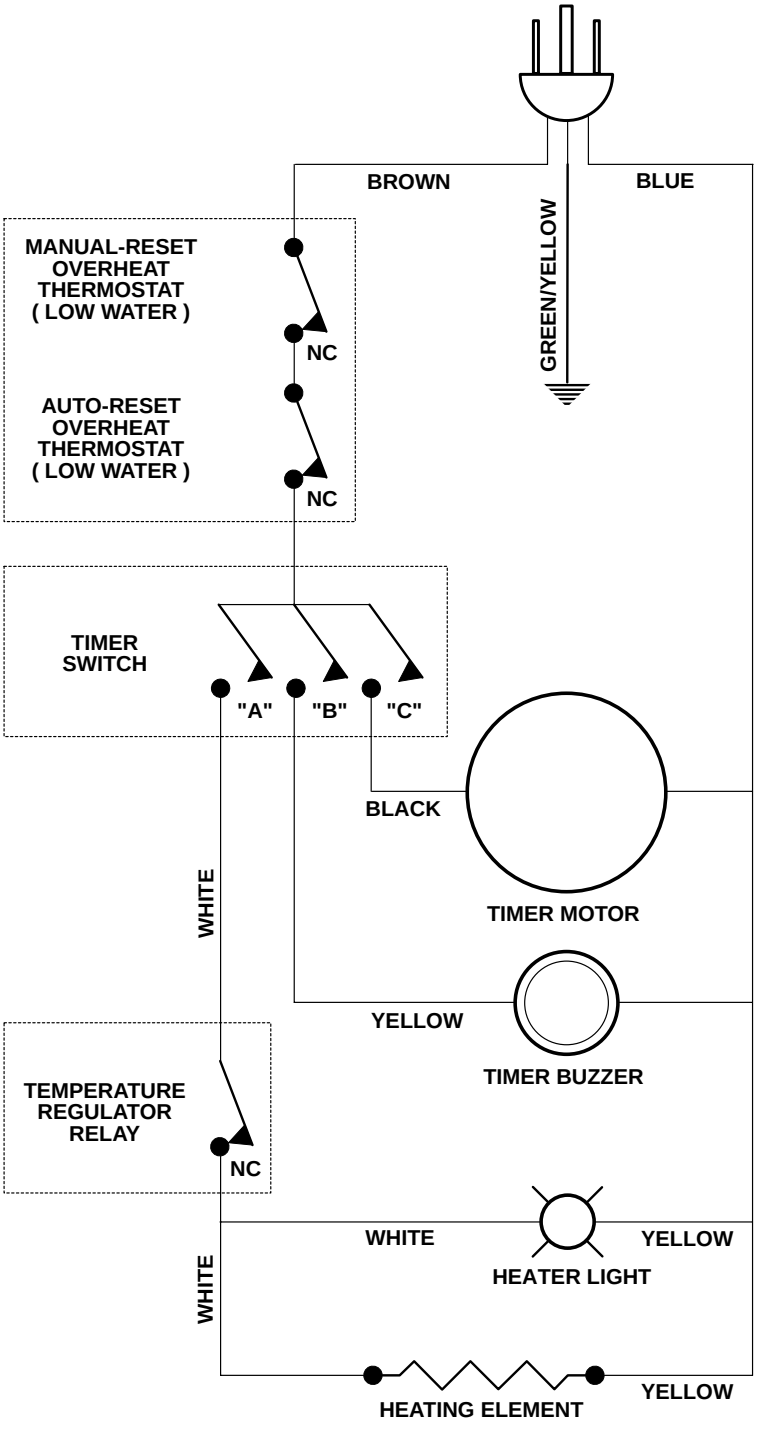

Figure 5-1 (Sheet 2 of 2). Electrical Schematic -
Units With Serial Numbers MJ1000 thru Present, and MN1000 thru Present

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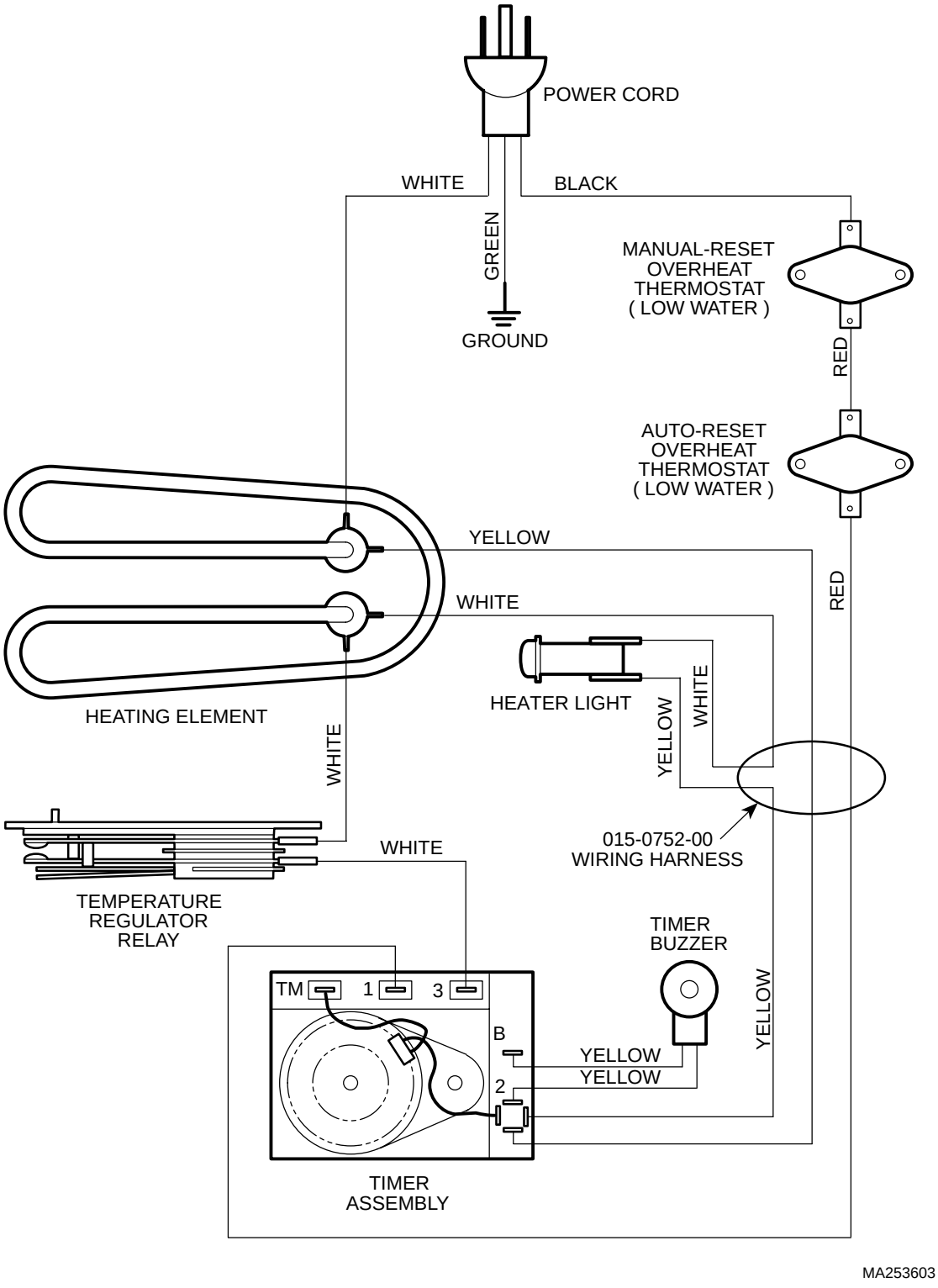

Figure 5-2 (Sheet 1 of 2). Wiring Diagram - Units With Serial Numbers MH1000 thru Present, MK1000 thru Present, ML1000 thru Present, and MM1000 thru Present.

SECTION V
SCHEMATICS AND DIAGRAMS

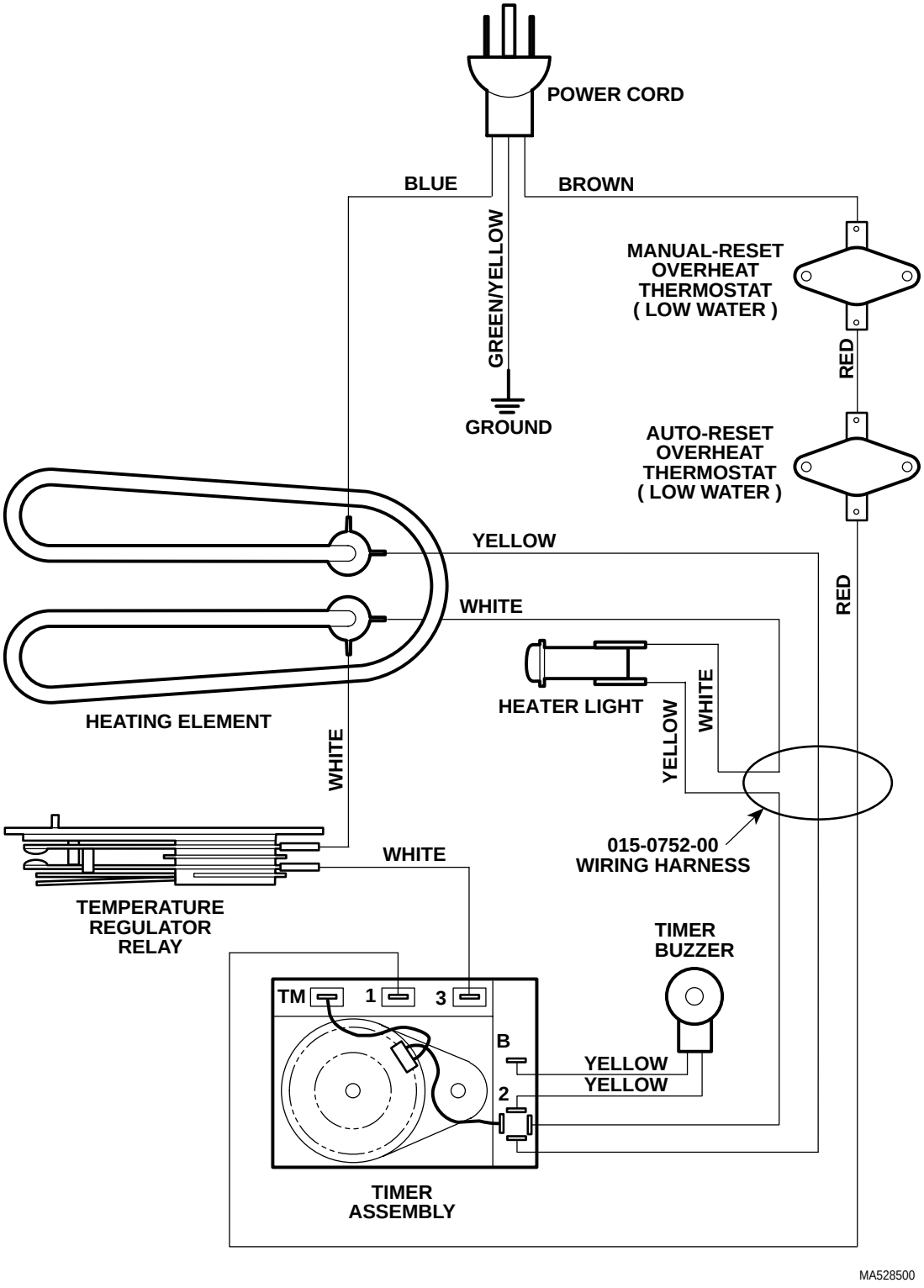

Figure 5-2 (Sheet 2 of 2). Wiring Diagram -
Units With Serial Numbers MJ1000 thru Present, and MN1000 thru Present

5.2 Flow Diagrams

Figure 5-3, sheets 1 thru 4, illustrate the water, heated water, steam, and vented steam/water flow throughout the sterilizer during a cycle.

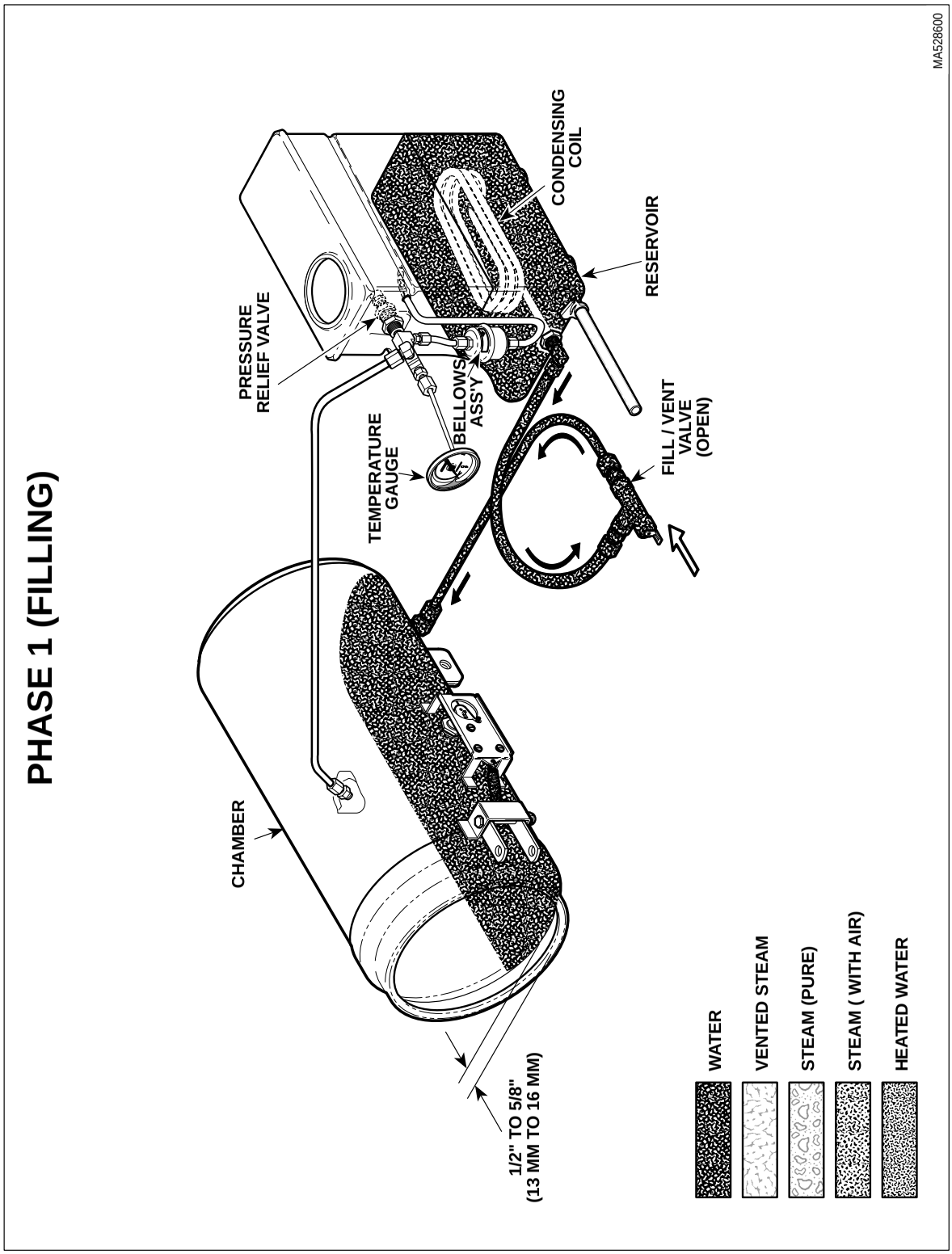

Figure 5-3 (Sheet 1 of 4). Flow Diagram

Return To Table Of Contents

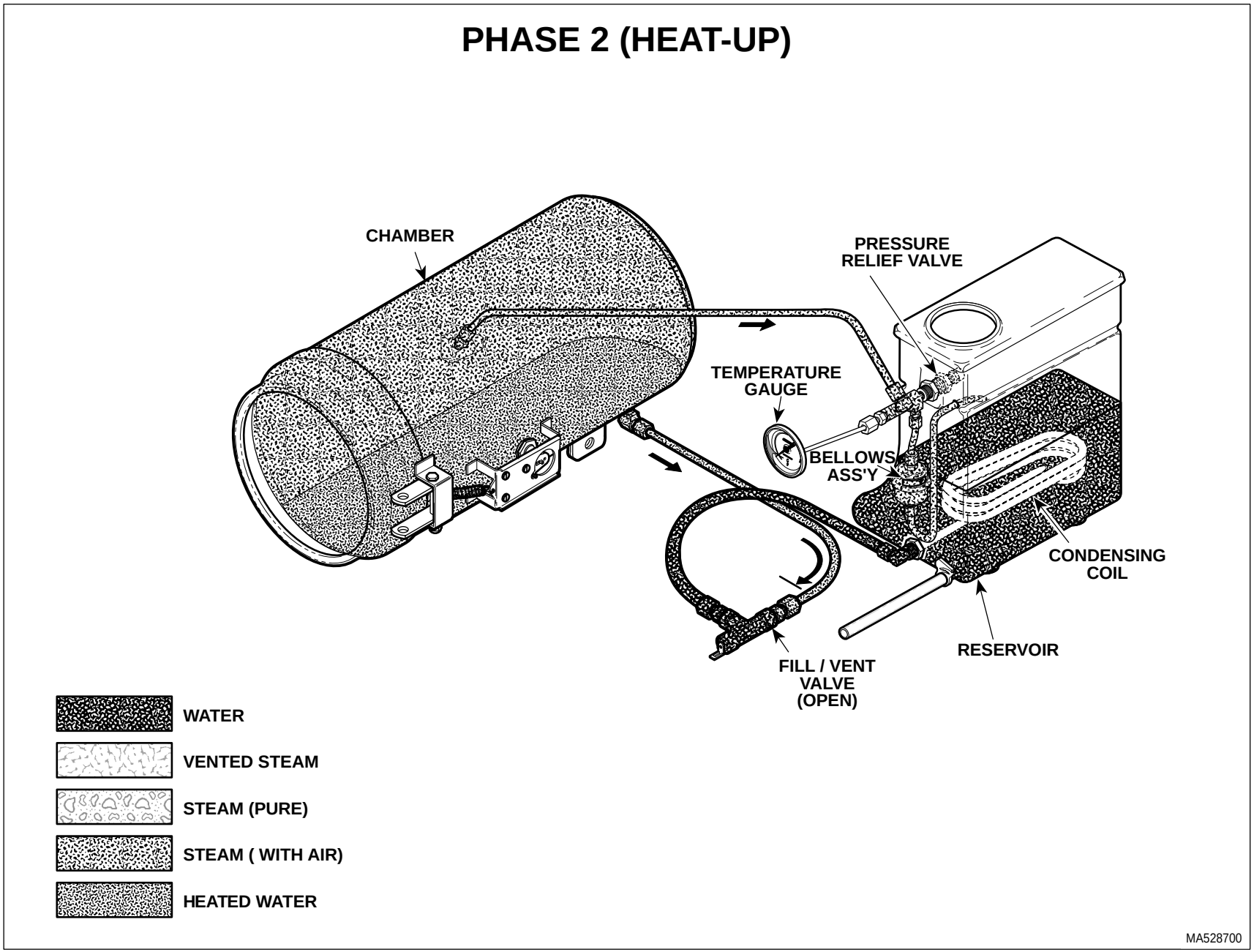

Figure 5-3 (Sheet 2 of 4). Flow Diagram

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PHASE 3 (STERILIZING)

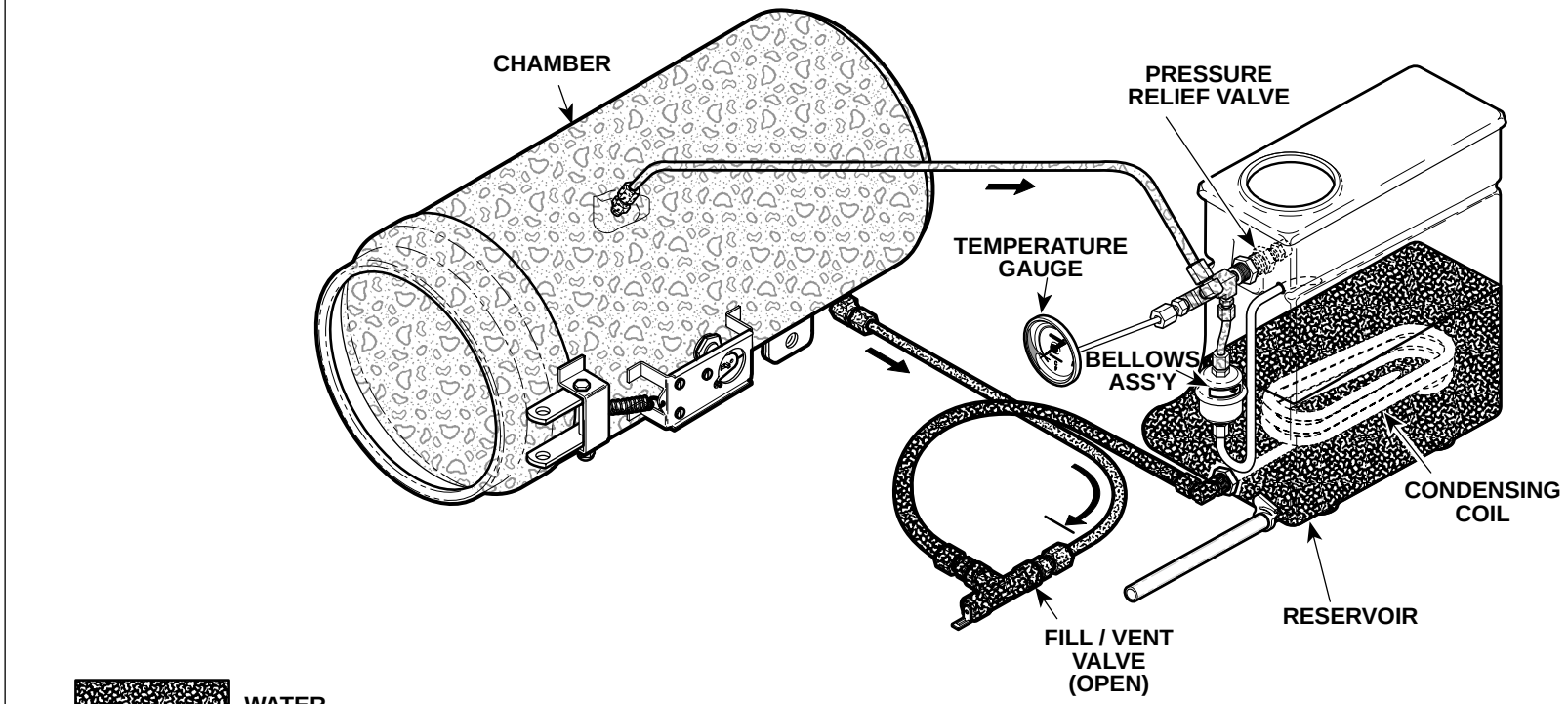

Figure 5-3 (Sheet 3 of 4). Flow Diagram

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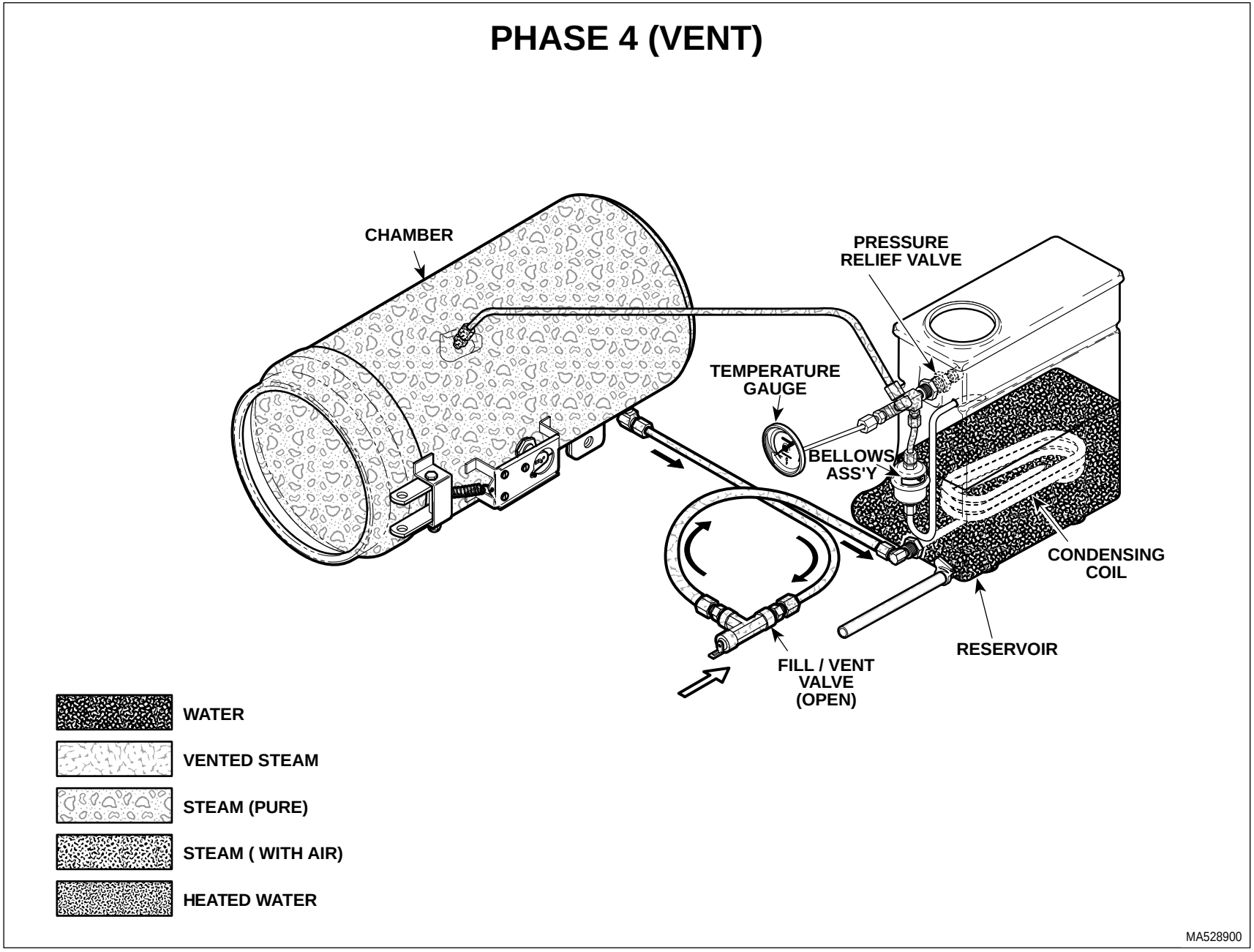

Figure 5-3 (Sheet 4 of 4). Flow Diagram

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5.3 Suggested Times And Temperatures Charts

Table 5-1 lists the suggested times and temperatures to use when sterilizing a certain type of load in the M7.

Table 5-2 is a chart which lists what pressure should be present at particular temperature.

Table 5-1. Suggested Times And Temperatures

Load	Temperature °F	Temperature °C	Time
Unwrapped Instruments*	270°	132°	3 minutes
Wrapped Instruments	270°	132°	5 minutes
Cotton Dressings & Bandages	250°	121°	20 minutes
Syringes - (disassembled)	250°	121°	20 minutes
Rubber Goods and Gloves	250°	121°	15 minutes
* Instruments for immediate use.			

Table 5-2. Pressure / Temperature Chart

PSI	°C	°F	PSI	°C	°F
0	100.0	212.0	16	122.0	251.6
1	101.9	215.4	17	123.0	253.4
2	103.6	218.5	18	124.1	255.4
3	105.3	221.5	19	125.0	257.0
4	106.9	224.4	20	126.0	258.8
5	108.4	227.1	21	126.9	260.0
6	109.8	229.6	22	127.8	262.0
7	111.3	232.3	23	128.7	263.7
8	112.6	234.7	24	129.6	265.3
9	113.9	237.0	25	130.4	266.7
10	115.2	239.4	26	131.3	268.3
11	116.4	241.5	27	132.1	269.8
12	117.6	243.7	28	132.9	271.2
13	118.8	245.8	29	133.7	272.7
14	119.9	247.8	30	134.5	274.1
15	121.0	249.8			

Normal steam sterilizing range is 250 °F to 270 °F.

Figures in chart are for steam pressure only. The presence of any air in the autoclave invalidates temperature readings.

SECTION V
SCHEMATICS AND DIAGRAMS

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SECTION VI
PARTS LIST

6.1 Introduction

The illustrated parts list provides information for identifying and ordering the parts necessary to maintain the unit in peak operating condition. Refer to paragraph 1.5 for parts ordering information.

The parts list also illustrates disassembly and assembly relationships of parts.

6.2 Description of Columns

The *Item* column of the parts list gives a component its own unique number. The same number is given to the component in the parts illustration. This allows a part number of a component to be found if the technician can visually spot the part on the illustration. The technician simply finds the component in question on the illustration and notes the item number of that component. Then, he finds that item number in the parts list. The row corresponding to the item number gives the technician the part number, a description of the component, and quantity of parts per subassembly. Also, if a part number is known, the location of that component can be determined by looking for the item number of the component on the illustration.

The *Part No.* column lists the MIDMARK part number for that component.

The *Description* column provides a physical description of the component.

The *Qty.* column lists the number of units of a particular component that is required for the subassembly. The letters “AR” denote “as required” when quantities of a particular component cannot be determined, such as: adhesive.

Bullets { • } in the *Part No.* column and the *Description* column show the indenture level of a component. If a component does not have a bullet, it is a main component of that illustration. If a component has a bullet, it is a subcomponent of the next component listed higher in the parts list than itself that does not have a bullet. Likewise, if a component has two bullets it is a subcomponent of the next component listed higher in the parts list than itself that has only one bullet.

6.3 Torque Specifications and Important Assembly Notes

When specific assembly torque specifications, measurements, or procedures have been identified, by our engineering department, as required to assure proper function of the unit, those torque specifications measurements, and procedures will be noted on the parts illustrations. Adherence to these requirements is essential.

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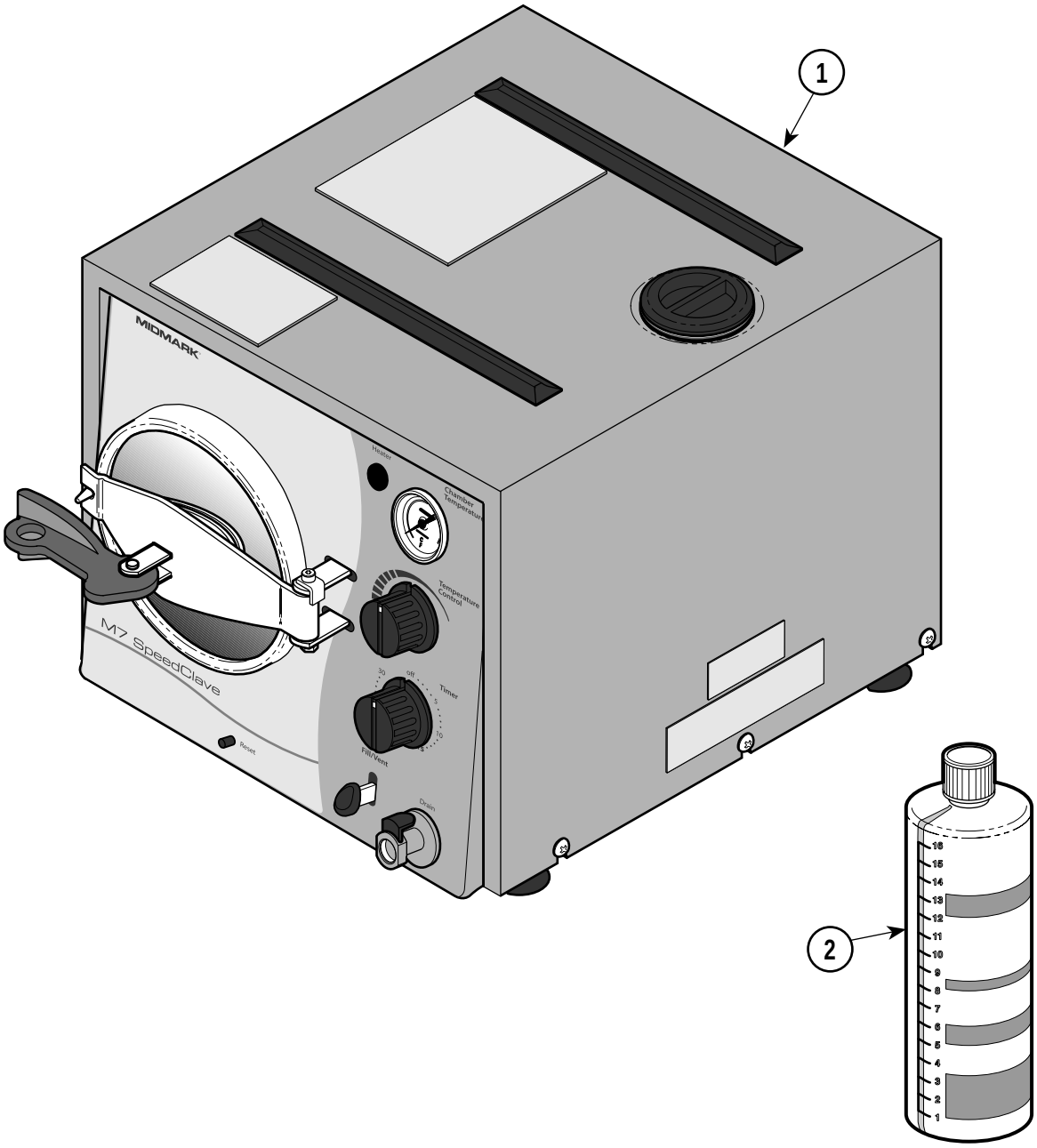
M7 Sterilizer



MA512000

Item	Part No.	Description	Qty.
1	M7-011	Ritter M7 Steam Sterilizer {115/60/1} (S/N Prefix "MH")	Ref
	M7-012	Midmark M7 Steam Sterilizer {240/50/1} (S/N Prefix "MJ")	Ref
	M7-013	Midmark M7 Steam Sterilizer {100/60/1} (S/N Prefix "MK")	Ref
	M7-014	Midmark M7 Steam Sterilizer {115/60/1} (S/N Prefix "ML")	Ref
	M7-015	Dabi Atlante M7 {115/60/1} (S/N Prefix "MM")	Ref
	M7-016	Dabi Atlante M7 {230/50/1} (S/N Prefix "MN")	Ref
2	002-0396-00	Sterilizer Cleaner	1
	077-0033-00	Material Safety Data Sheet	AR

Always Specify Model & Serial Number

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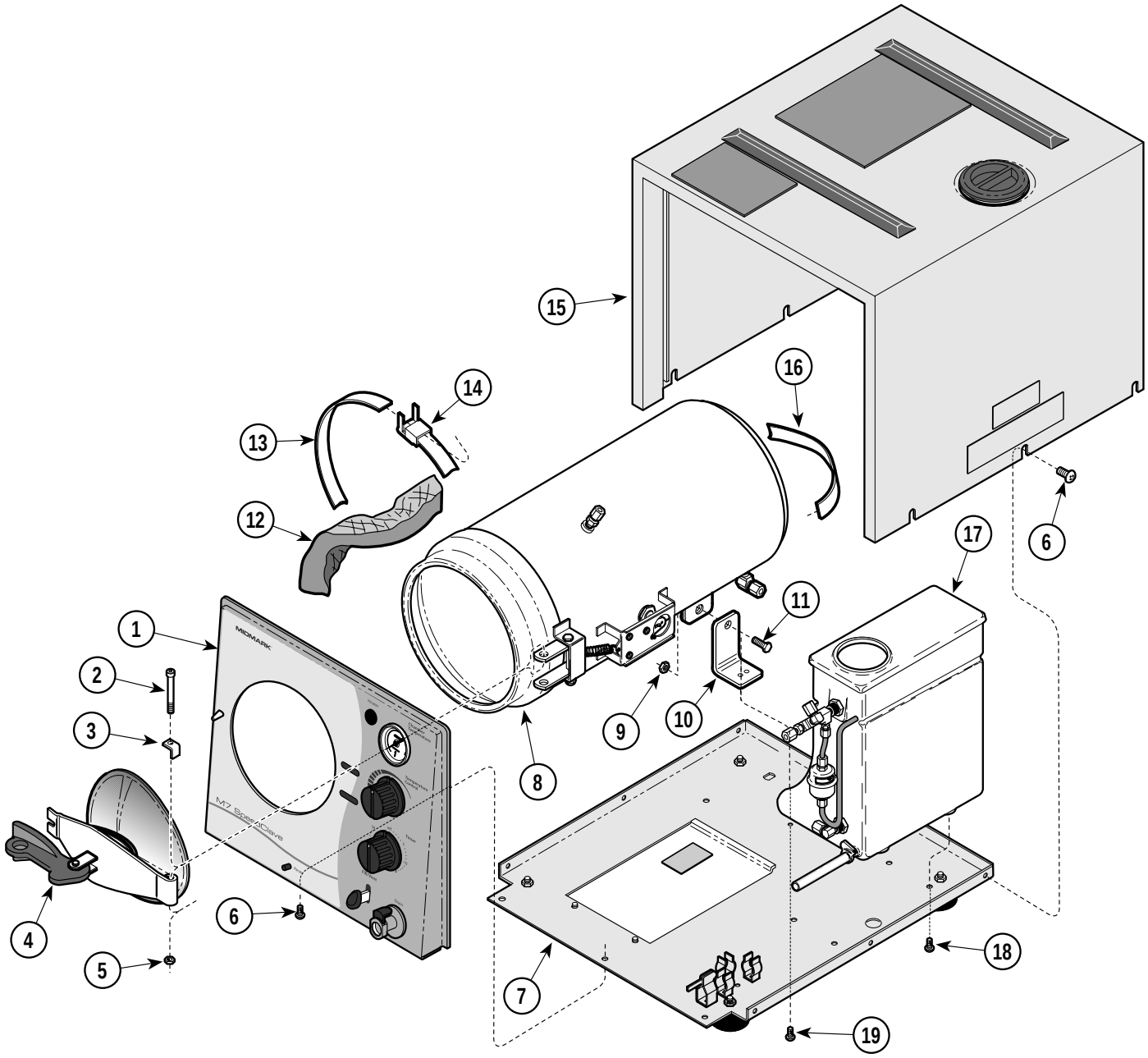
Sterilizer Main Components



MA512100

Item	Part No.	Description	Qty.
1		Front Panel (Refer to "Front Panel Components" Elsewhere)	Ref
2	040-0010-103	Screw	1
3	H97991	Door Stop	1
4		Door Assembly (Refer to "Door Assembly" Elsewhere)	Ref
5	041-0010-10	Torque Nut	1
6	040-0010-125	Screw	9
7		Base Assembly (Refer to "Base Components" Elsewhere)	Ref
8	029-2304-00	Shell Assembly [M7-011, M7-014 and M7-015] (Refer to "Chamber Components {Side or Lower}" Elsewhere)	1
	029-2304-01	Shell Assembly [M7-012 and M7-016] (Refer to "Chamber Components {Side or Lower}" Elsewhere)	1
	029-2304-02	Shell Assembly [M7-013] (Refer to "Chamber Components {Side or Lower}" Elsewhere)	1
9	041-0250-15	Nut	1
10	051-0721-00	Chamber Leg Bracket	1
11	040-0250-47	Screw	1
12	H97980	Insulation	1
13	H99388-29	Banding Strap	2
14	H99387	Banding Strap Clip	2
15		Cover Assembly (Refer to "Cover Components" Elsewhere)	Ref
16	H99388-27	Banding Strap End	1
17		Tank Assembly (Refer to "Plumbing Components" Elsewhere)	Ref
18	040-0010-75	Screw	4
19	040-0010-74	Screw	1

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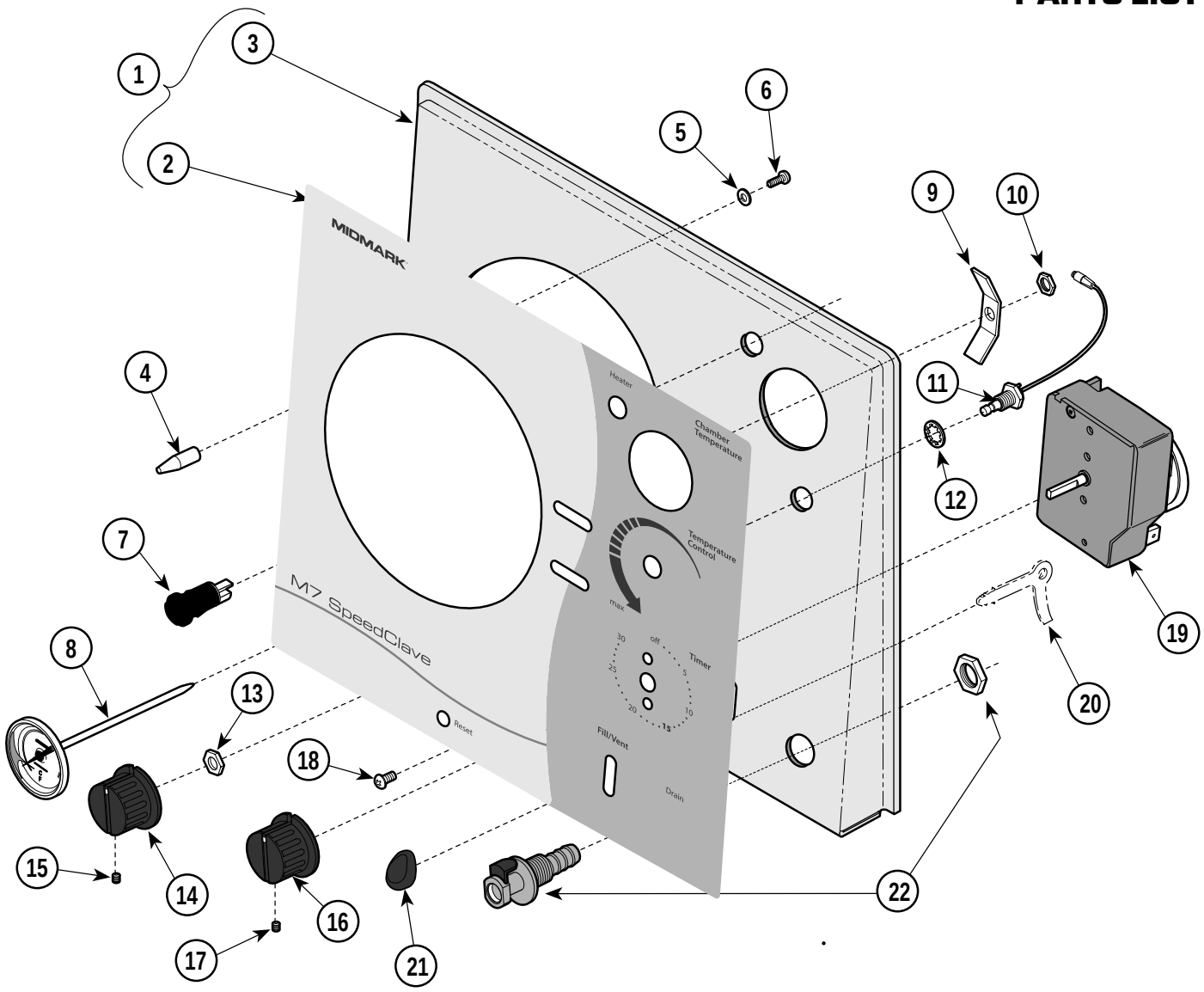
Front Panel Components



MA512201

Item	Part No.	Description	Qty.
1	002-0688-00	Ritter Face Panel Kit (Includes Items 1 & 2)	
2	002-0688-00	Ritter Face Panel Kit (Includes Items 1 & 2)	
	061-0774-00	Ritter Panel Label (M7-011)	1
	061-0774-01	Midmark Panel Label(M7-012/-013/-014)	1
	061-0774-02	Dabi Atlante Label(M7-015/-016)	1
3	050-4285-10	Painted Front Panel (Less Label)	1
4	057-0461-00	Alignment Pin	1
5	045-0001-08	Lockwasher	1
6	040-0010-75	Screw	1
7	015-1304-00	Pilot Light (100 / 115 Volt Units)	1
	015-1304-01	Pilot Light (220 / 240 Volt Units)	1
8	014-0229-00	Thermometer	1
9	H224033	Thermometer Bracket	1
10	041-0250-07	Jam Nut	1
11	H98064	Flexible Shaft Assembly (Includes Item 10 and 11)	1
12	• HWL008-27	• Lockwasher	1
13	• H98149	• Nut	1
14	053-1008-00	Control Knob (Includes item 13)	1
15	•	• Setscrew	1
16	053-1008-01	Timer Knob (Includes item 15)	1
17	•	• Setscrew	1
18	040-0008-29	Screw	2
19	015-0744-00	Timer (M7-011, M7-013, M7-014, M7-015) (Items #18, #19 and 015-0745-02 Included in kit 002-0373-00)	1
	015-0744-01	Timer (M7-012) (Items #18, #19 and 015-0745-02 Included in kit 002-0373-01)	1
	015-0744-02	Timer (M7-016)(Items #18, #19 and 015-0745-02 Included in kit 002-0373-01)	1
20		Lever (Refer to "Base Components " Elsewhere)	Ref
21	053-0987-00	Fill Vent Knob	1
22	053-0990-00	Shut-off Coupling (Includes Nut)	1

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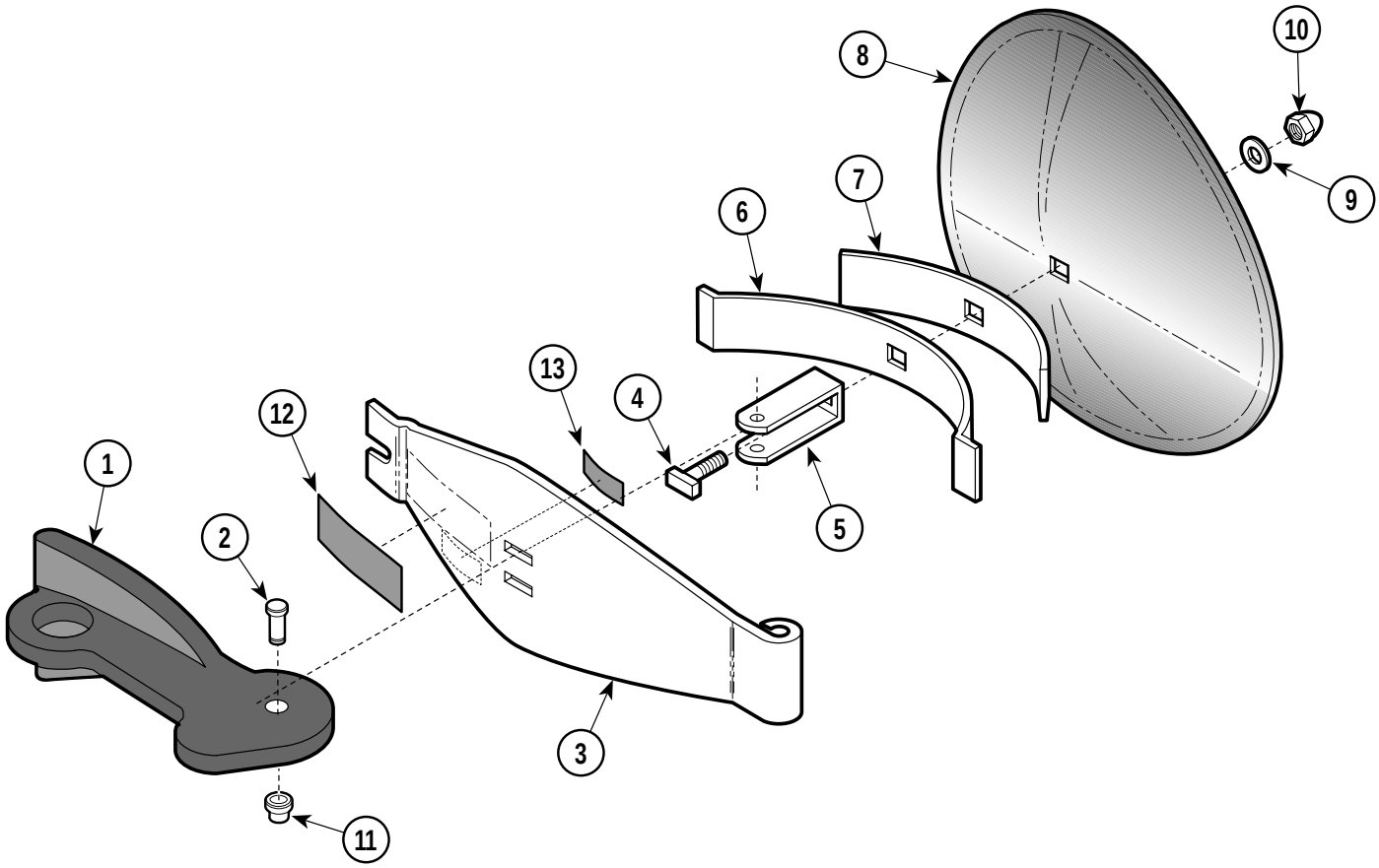
Door Assembly



MA511700

Item	Part No.	Description	Qty.
	002-0249-00	Door Assembly (Includes Items 1 thru 12)	1
1	• 053-0513-00	• Handle (Apply Valve Lubricant #064-0002-01)	1
2	• 042-0005-16	• ClevisPin	1
3	• 050-2359-00	• Door Cross Arm	1
4	• H96772	• "T" Bolt	1
5	• H96776	• "U" Bracket	1
6	• H96775	• Long Spring	1
7	• H96774	• Short Spring	1
8	• H106313	• Door	1
9	• H96771	• Washer	1
10	• H96773	• Cap Nut (Apply Loctite #042-0024-02)	1
11	• K906034	• Push Nut	1
12	• 061-0649-00	• Caution/Hot Label (Midmark/Ritter Units)	1
	061-0599-00	Caution/Hot Label (Dabi-Atlante Units)	1
13		Small Serial Number Label	1

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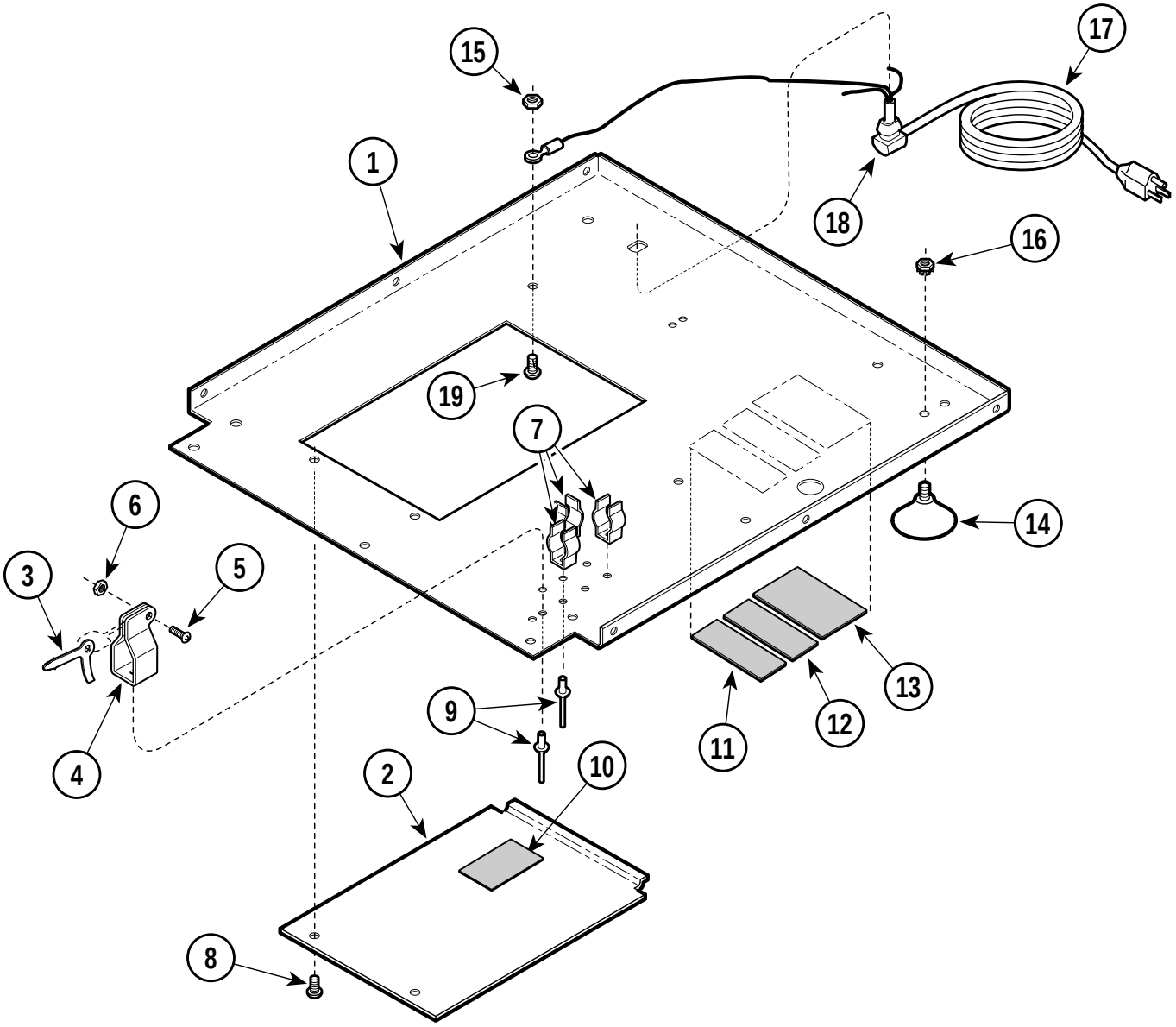
Base Components



MA514602

Used on Units with Serial Numbers MH1000 thru MH1802, MJ1000 thru MJ1091 and ML1000 thru ML2133

Item	Part No.	Description	Qty.
1	050-4286-00	Base Plate	1
2	050-4423-00	Base Inspection Cover	1
3	050-4315-00	Lever	1
4	050-1926-00	Vent Lever Bracket	1
5	040-0010-73	Screw	1
6	041-0010-10	Nut	1
7	H98072	Clip	3
8	040-0010-125	Screw	2
9	042-0010-07	Pop Rivet	5
10	061-0519-00	Wiring Diagram Label (M7-011, M7-013 and M7-014)	1
	061-0527-00	Wiring Diagram Label (M7-012)	1
	061-0601-00	Wiring Diagram Label (M7-015)	1
	061-0607-00	Wiring Diagram Label (M7-016)	1
11	061-0509-00	C.S.A. Label (Certain Units Only)	Ref
12	061-0301-00	U.L. Label (Certain Units Only)	Ref
13		Serial Number Tag	Ref
14	H98021	Foot	4
15	041-0001-01	Nut	4
16	122357	Keps Nut	4
17	H98159	Cord (M7-011, M7-013, M7-014, M7-015)	1
	015-0688-13	Cord (M7-012, M7-016)	1
18	H98160	Strain Relief	1
19	040-0010-74	Screw	1

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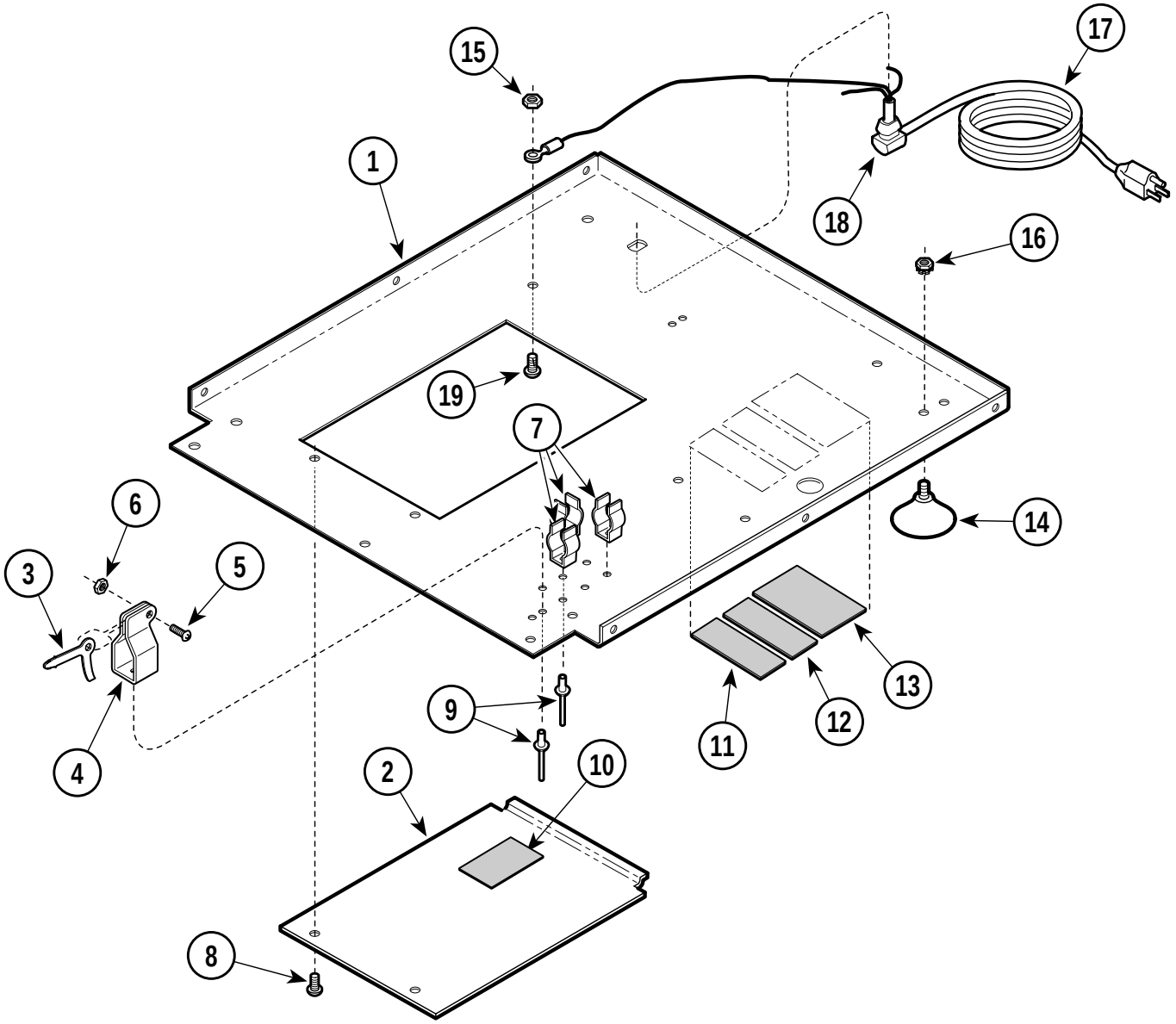
Base Components



MA514601

Used on Units with Serial Numbers MH1803, MJ1092, MK1000, ML2134, MM1000 and MN1000 thru Present

Item	Part No.	Description	Qty.
1	050-4286-00	Base Plate	1
2	050-4423-00	Base Inspection Cover	1
3	050-4315-00	Lever	1
4	050-1926-00	Vent Lever Bracket	1
5	040-0010-73	Screw	1
6	041-0010-10	Nut	1
7	016-0843-00	Fuse Clip	3
8	040-0010-125	Screw	2
9	042-0010-07	Pop Rivet	5
10	061-0519-00	Wiring Diagram Label (M7-011, M7-013 and M7-014)	1
	061-0527-00	Wiring Diagram Label (M7-012)	1
	061-0601-00	Wiring Diagram Label (M7-015)	1
	061-0607-00	Wiring Diagram Label (M7-016)	1
11	061-0509-00	C.S.A. Label (Certain Units Only)	Ref
12	061-0301-00	U.L. Label (Certain Units Only)	Ref
13		Serial Number Tag	Ref
14	H98021	Foot	4
15	041-0001-01	Nut	4
16	122357	Keps Nut	4
17	H98159	Cord (M7-011, M7-013, M7-014, M7-015)	1
	015-0688-13	Cord (M7-012, M7-016)	1
18	H98160	Strain Relief	1
19	040-0010-74	Screw	1

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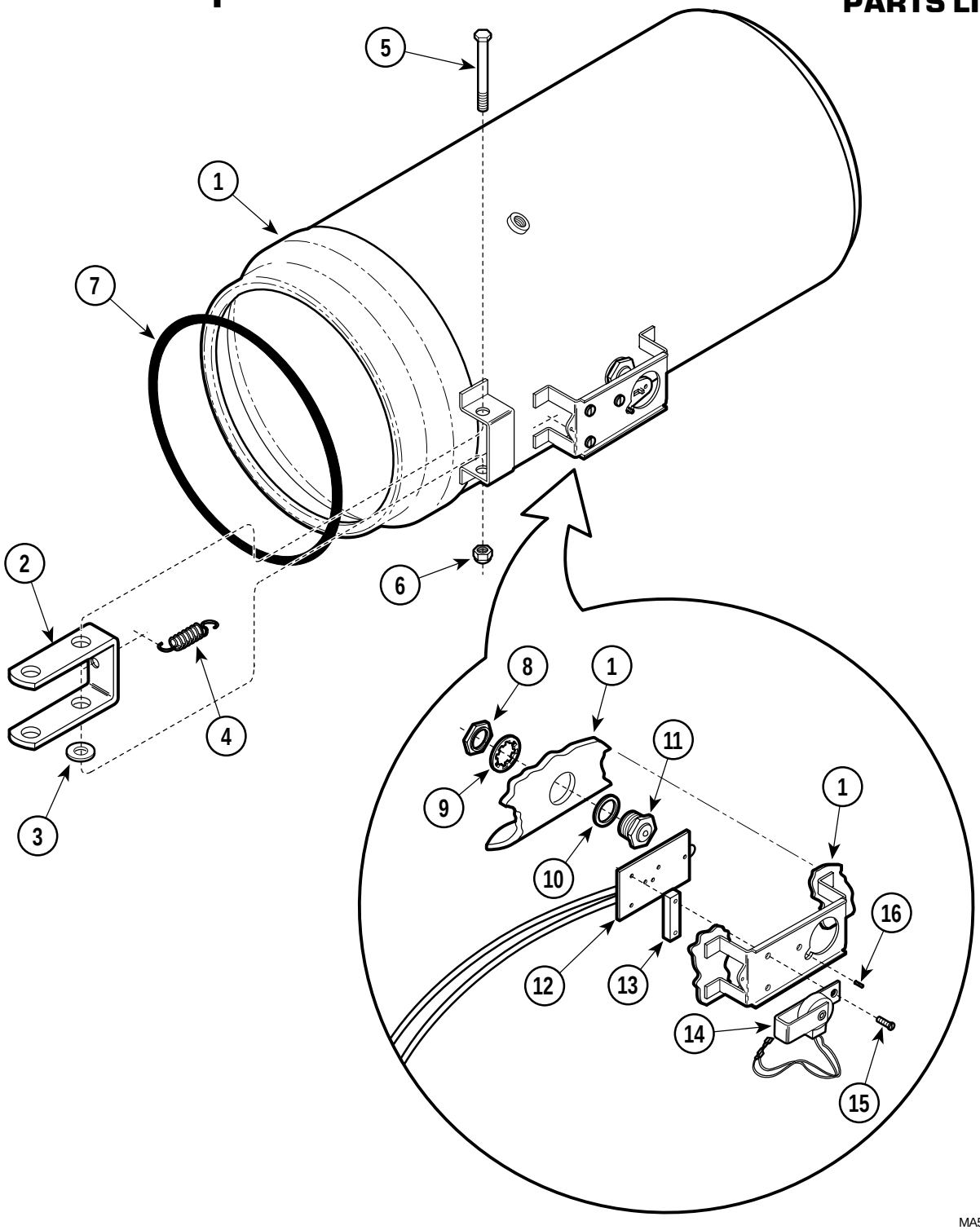
Chamber Components - Side



MA511901

Item	Part No.	Description	Qty.
1	030-0976-00	Shell Weldment	1
2	050-4783-00	Small Hinge	1
3	045-0000-04	Washer	1
4	H106330	Spring	1
5	040-0250-69	Screw	1
6	041-0250-15	Nut	1
7	002-0243-00	Door Gasket	1
8	H97075	Diaphragm Nut	1
9	H97076	Diaphragm Lockwasher	1
10	H97966	Diaphragm Cup Gasket	1
11	H97948	Diaphragm Cup	1
12	002-0263-00	Relay Assembly(Includes Items 13 & 14)	1
13	H97951	Relay Spacer	1
14	015-0745-02	Timer Buzzer (M7-011, M7-013, M7-014 M7-015)(Included in kit 002-0373-00)	1
	015-0745-03	Timer Buzzer (M7-012 and M7-016) (Included in kit 002-0373-01)	1
15	040-0006-44	Screw	3
16	040-0008-47	Set Screw	1

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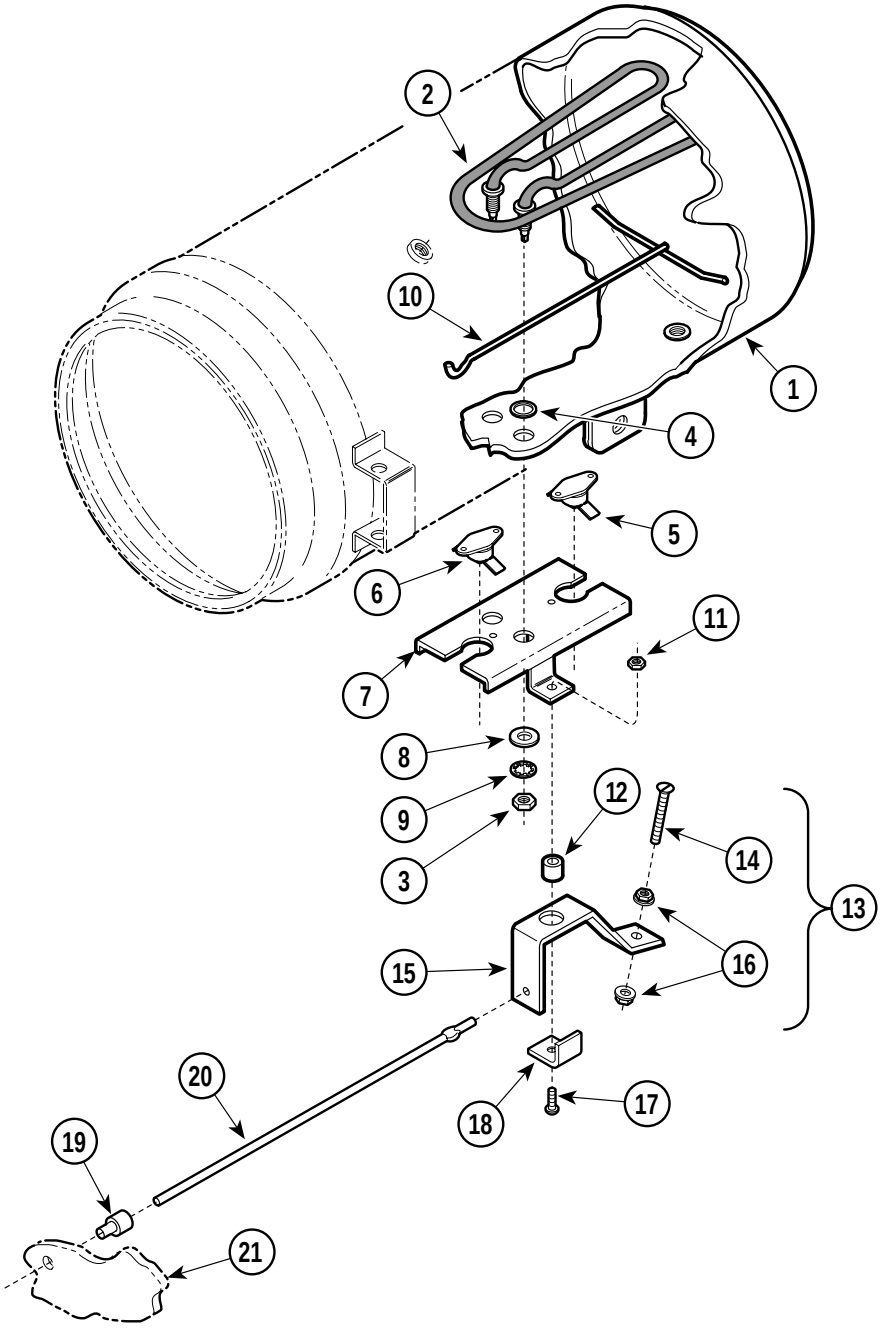
Chamber Components - Lower



MA511800

Item	Part No.	Description	Qty.
1		Chamber (Refer to "Chamber Components - Side" Elsewhere)	Ref
2	002-0245-00	Heater (M7-011, M7-014, M7-015) [Includes Item 3 and 4]	1
	015-0894-01	Heater (M7-012, M7-016) [Includes Items 3]	1
	015-0894-02	Heater (M7-013) [Includes Items 3]	1
3	H97949	Nut	2
4	H98137	Gasket	2
5	H225639	Thermostat	1
6	015-0647-00	Thermostat	1
7	030-0929-00	Bracket	1
8	H97971	Heater Element Washer	1
9	045-0001-56	Lockwasher	2
10	H225913	Heater Spacer Assembly	1
11	041-0010-10	Nut	1
12	H225620	Spacer	1
13	029-2305-00	Rocker Assembly (Includes Items 14, 15, and 16)	1
14	040-0006-43	Screw	1
15	050-4414-00	Rocker Bracket	1
16	041-0006-02	Locknut	2
17	040-0010-74	Screw	1
18	H225619	Bracket	1
19	053-1035-00	Reset Button	1
20	057-0520-00	Reset Rod	1
21		Front Panel (Refer to "Front Panel Components" Elsewhere)	Ref

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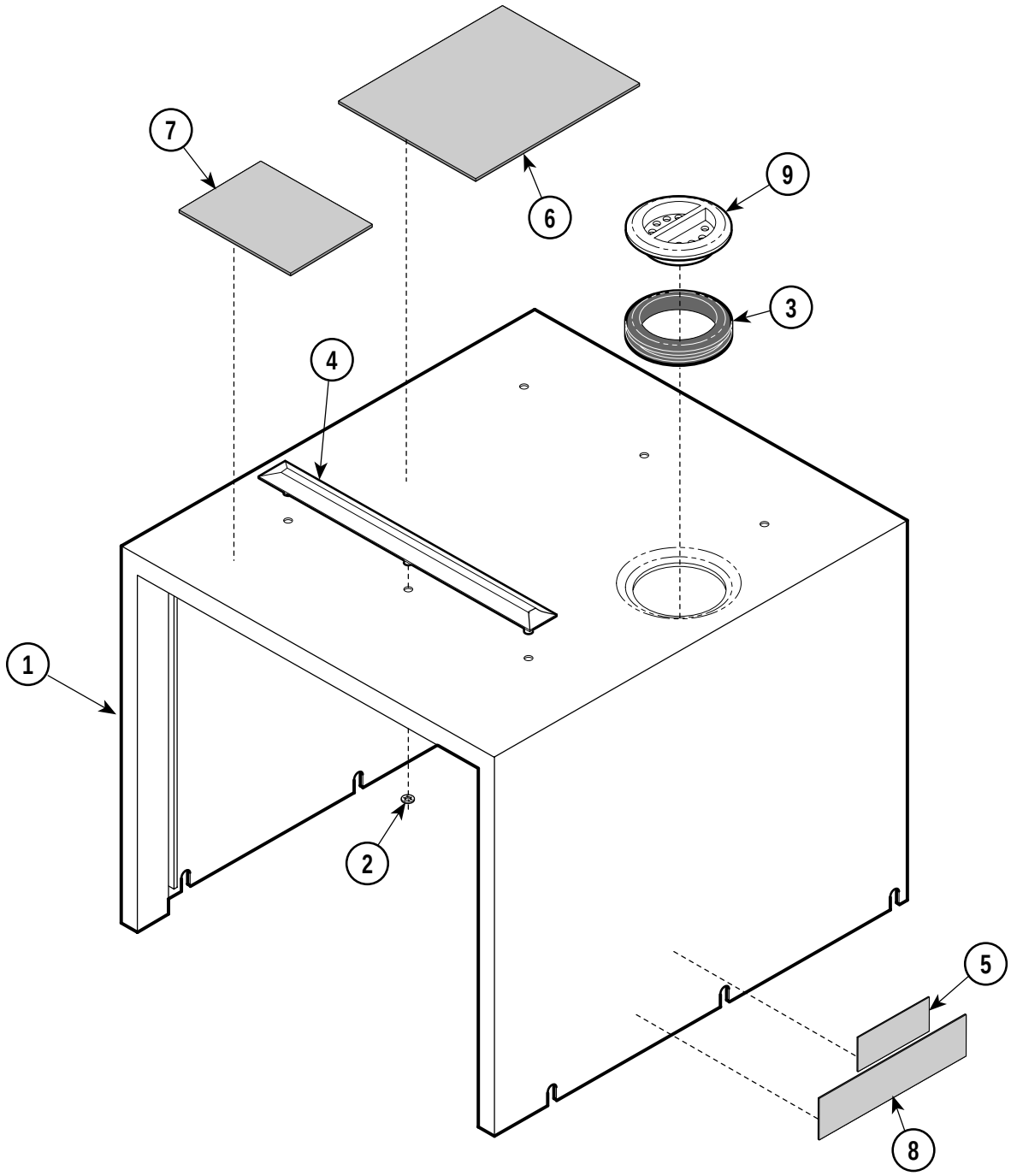
Cover Components



MA241302

Item	Part No.	Description	Qty.
	002-0643-00	M7 Cover Kit (Midmark/Ritter Units) {Includes Items 1thru 8}	1
	002-0XXX-01	M7 Cover Kit (Dabi-Atlante Units) {Includes Items 1thru 8}	1
1	• 030-1198-00	• Cover Assembly	1
2	• H98011	• Push Nut	6
3	• H98135	• Rubber Seal	1
4	• 053-1037-00	• Tray Cooling Rail	2
5	• H335669	• Warning Label (Midmark/Ritter Units)	1
	• 061-0598-00	• Warning Label (Dabi-Atlante Units)	1
6	• 061-0443-00	• Operation Instructions Plate (Midmark/Ritter Units)	1
	• 061-0594-00	• Operation Instructions Plate (Dabi-Atlante Units)	1
7	• 061-0593-00	• Danger Plate (Dabi-Atlante Units)	1
8	• 061-0203-00	• Caution Label (Midmark/Ritter Units)	1
	• 061-0600-00	• Caution Label (Dabi-Atlante Units)	1
9	H98009	Filler Cap	1

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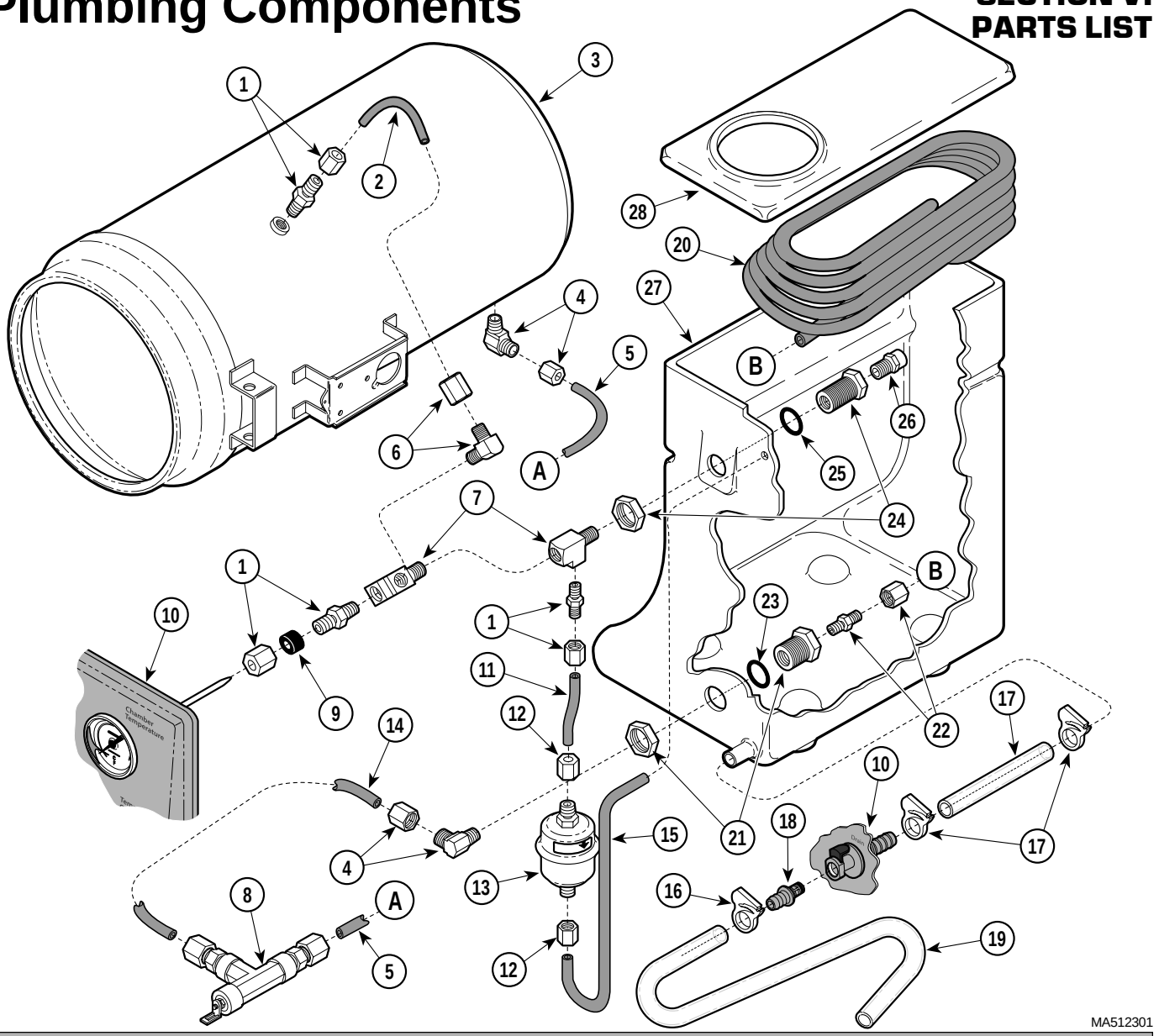
Plumbing Components



Used on Units with Serial Numbers MH1000 thru MH1802, MJ1000 thru MJ1091 and ML1000 thru ML2133

Item	Part No.	Description	Qty.
	002-0679-00	Chamber Manifold Tube Kit (includes Items 1, 2, and 6)	
1	014-0183-01	Fitting (Includes Comp. Sleeve & Nut)	3
	• 014-0392-00	• Compression Nut	1
2	H335943	Tube	1
3		Shell Assembly (Refer to "Chamber Components {Side or Lower}" Elsewhere)	1
4	014-0184-01	Elbow (Includes Comp. Sleeve & Nut)	2
	• 014-0392-01	• Compression Nut	1
5	052-0332-00	• Fill Tube	1
6	014-0184-00	Elbow (Includes Comp. Sleeve & Nut)	1
	• 014-0392-00	• Compression Nut	1
7	014-0058-00	Street Tee Fitting	2
8		Vent Valve Assembly (Refer to "Valve Assembly" Elsewhere)	1
9	053-0404-07	Neoprene Tubing	1
10		Front Panel (Refer to "Front Panel Assembly" Elsewhere)	1
11	014-0241-00	Tube	1
12	014-0392-00	Compression Nut	2
13	002-0375-00	Bellows Kit	1
14	052-0331-00	Vent Valve Tube	1
15	014-0240-00	Tube	1
16	016-0748-01	Hose Clamp	3
17	053-0391-02	Tank Drain Tube	1
18	053-0990-01	Barbed Fitting	1
19	053-0391-03	Removable Drain Tube	1
20	029-2291-00	Condensing Tube Assembly (Includes Items 22 and 23)	1
21	• 014-0209-00	• Bulkhead Fitting (Includes Nut)	1
22	• 014-0183-02	• Male Connector (Includes Compression Sleeve and Nut)	1
23	053-1036-00	Neoprene Bulkhead Washer	1
24	014-0324-00	Bulkhead Fitting (Includes Nut)	1
25	053-1036-01	Neoprene Bulkhead Washer	1
26	H98089	• Safety Valve (Apply Teflon Tape #014-0026-00)	1
27	053-0944-00	Condensing Tank	1
28	053-0974-00	Condensing Tank Lid	1

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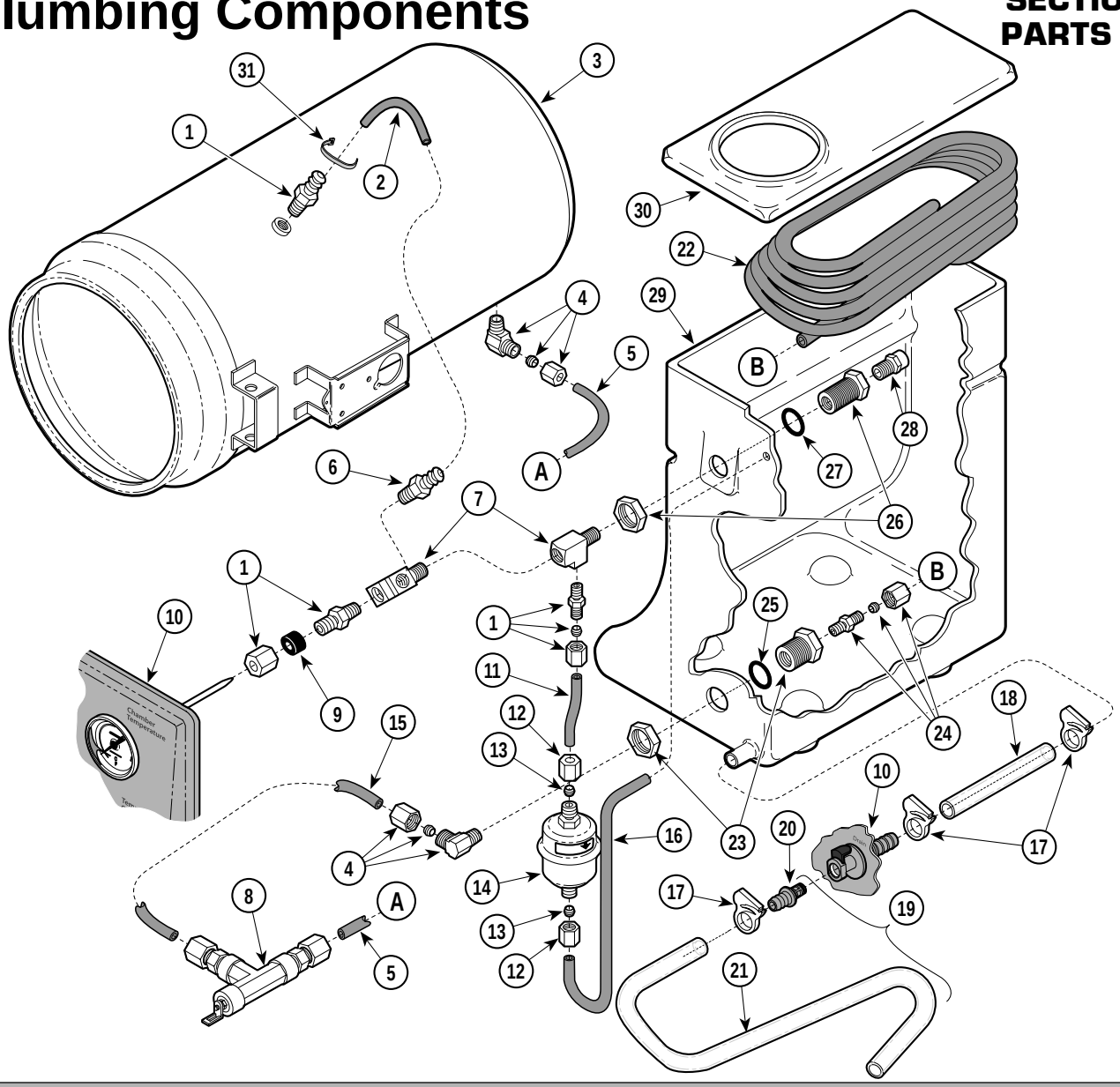
Plumbing Components



MA560502

Used on Units with Serial Numbers MH1803 thru MH2997, MJ1092 thru MJ1242, and ML2134 thru ML4039

Item	Part No.	Description	Qty.
	002-0679-00	Chamber Manifold Tube Kit (includes Items 1, 2, and 6)	
1	014-0183-01	Fitting (Includes Comp. Sleeve & Nut)	2
	• 014-0392-00	• Compression Nut	1
2	053-0404-05	Noeprene Tubing (Ref 002-0679-00)	1
3		Shell Assembly (Refer to "Chamber Components {Side or Lower}" Elsewhere)	1
4	014-0184-01	Elbow (Includes Comp. Sleeve & Nut)	2
	• 014-0392-01	• Compression Nut	1
5	052-0332-00	• Fill Tube	1
6	014-0282-02	Male Barb Fitting	2
7	014-0058-00	Street Tee Fitting	2
8		Vent Valve Assembly (Refer to "Valve Assembly" Elsewhere)	1
9	053-0404-07	Neoprene Tubing	1
10		Front Panel (Refer to "Front Panel Assembly" Elsewhere)	1
11	014-0241-00	Tube	1
12	014-0392-00	Compression Nut	2
13	002-0375-00	Bellows Kit	1
14	052-0331-00	Vent Valve Tube	1
15	014-0240-00	Tube	1
16	016-0748-01	Hose Clamp	3
17	053-0391-02	Tank Drain Tube	1
18	002-0653-00	Removable Drain Hose Kit	
19	• 053-0990-01	• Barbed Fitting	1
20	• 053-0391-03	• Removable Drain Tube	1
21	029-2291-00	Condensing Tube Assembly (Includes Items 22 and 23)	1
22	• 014-0209-00	• Bulkhead Fitting (Includes Nut)	1
23	• 014-0183-02	• Male Connector (Includes Compression Sleeve and Nut)	1
24	053-1036-00	Neoprene Bulkhead Washer	1
25	014-0324-00	Bulkhead Fitting (Includes Nut)	1
26	053-1036-01	Neoprene Bulkhead Washer	1
27	H98089	• Safety Valve (Apply Teflon Tape #014-0026-00)	1
28	053-0944-00	Condensing Tank	1
29	053-0974-00	Condensing Tank Lid	1

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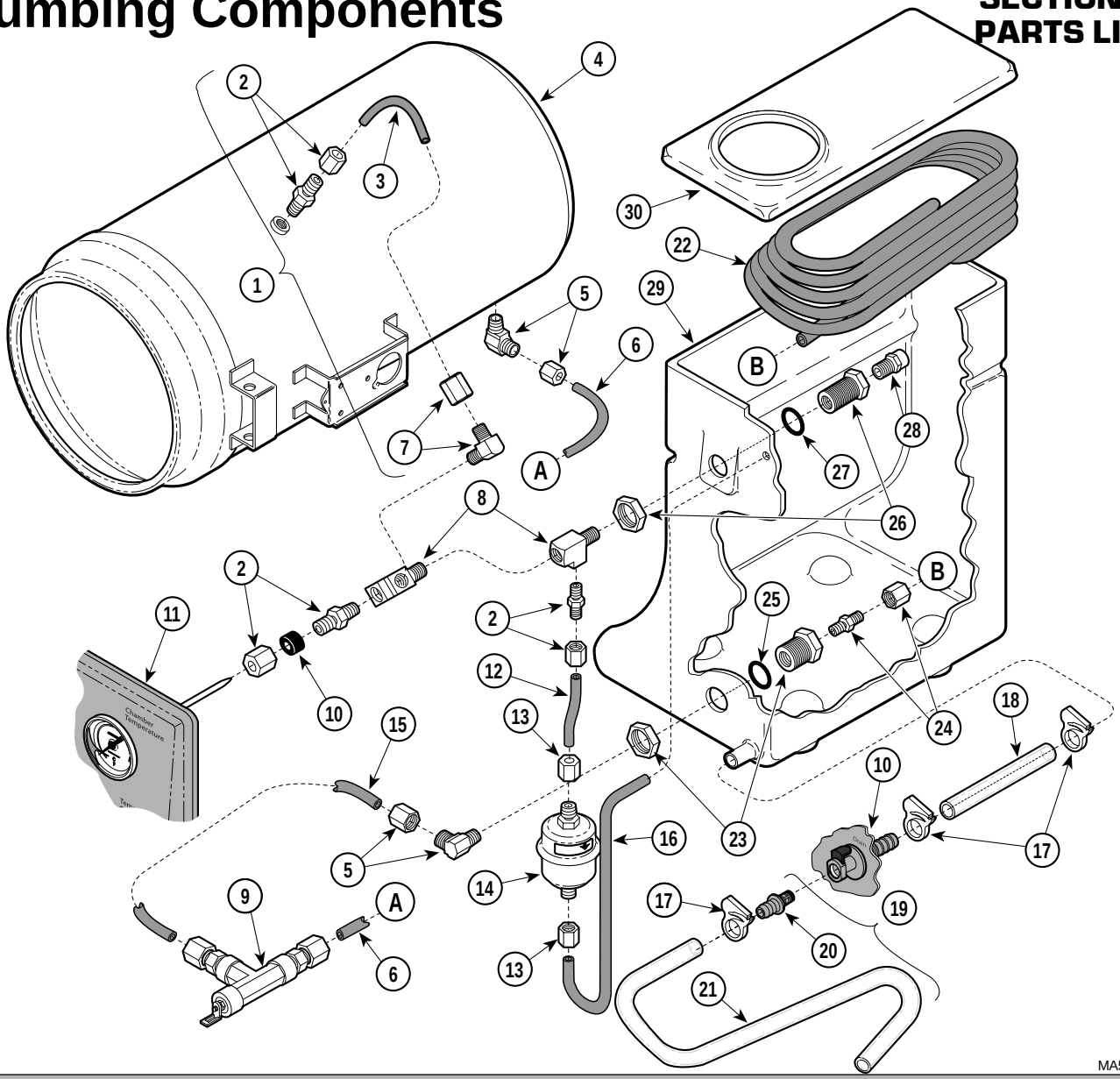
Plumbing Components



Used on Units with Serial Numbers MH2998, MJ1243 MK1000, ML4040, MM1000 and MN1000 thru Present

Item	Part No.	Description	Qty.
1	002-0679-00	Chamber Manifold Tube Kit (includes Items 1, 2, and 6)	
2	014-0183-01	Fitting (Includes Comp. Sleeve & Nut)	2
	• 014-0392-00	• Compression Nut	1
3	H335943	Copper Tubing	1
4		Shell Assembly (Refer to "Chamber Components {Side or Lower}" Elsewhere)	1
5	014-0184-01	Elbow (Includes Comp. Sleeve & Nut)	2
	• 014-0392-01	• Compression Nut	1
6	052-0332-00	• Fill Tube	1
7	014-0184-00	Male 90 degree Fitting	2
8	014-0058-00	Street Tee Fitting	2
9		Vent Valve Assembly (Refer to "Valve Assembly" Elsewhere)	1
10	053-0404-07	Neoprene Tubing	1
11		Front Panel (Refer to "Front Panel Assembly" Elsewhere)	1
12	014-0241-00	Tube	1
13	014-0392-00	Compression Nut	2
14	002-0375-00	Bellows Kit	1
15	052-0331-00	Vent Valve Tube	1
16	014-0240-00	Tube	1
17	016-0748-01	Hose Clamp	3
18	053-0391-02	Tank Drain Tube	1
19	002-0653-00	Removable Drain Hose Kit	
20	• 053-0990-01	• Barbed Fitting	1
21	• 053-0391-03	• Removable Drain Tube	1
22	029-2291-00	Condensing Tube Assembly (Includes Items 22 and 23)	1
23	• 014-0209-00	• Bulkhead Fitting (Includes Nut)	1
24	• 014-0183-02	• Male Connector (Includes Compression Sleeve and Nut)	1
25	053-1036-00	Neoprene Bulkhead Washer	1
26	014-0324-00	Bulkhead Fitting (Includes Nut)	1
27	053-1036-01	Neoprene Bulkhead Washer	1
28	H98089	• Safety Valve (Apply Teflon Tape #014-0026-00)	1
29	053-0944-00	Condensing Tank	1
30	053-0974-00	Condensing Tank Lid	1

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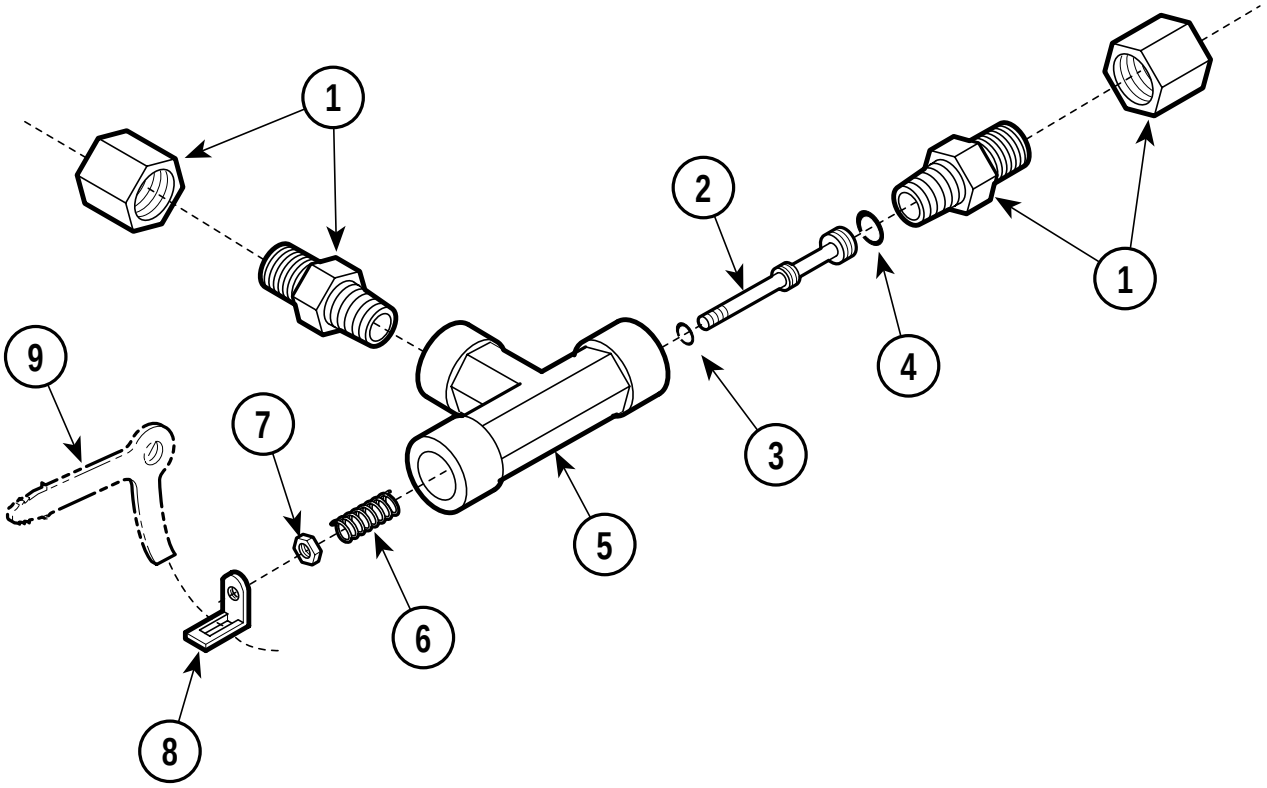
Valve Assembly



MA514501

Used on Units with Serial Numbers MH1000 thru MH1802, MJ1000 thru MJ1091 and ML1000 thru ML2133

Item	Part No.	Description	Qty.
	002-0247-00	Valve Assembly (Includ. Items 1 thru 8)	1
1	• 014-0183-02	• Fitting	2
	• • 014-0392-01	• • Compression Nut	1
2	• H98069	• Plunger	1
3	• H98138	• Valve O-Ring, Front (Apply High Temp Lube #064-0002-01)	1
4	• H98136	• Valve O-Ring, Back (Apply High Temp Lube #064-0002-01)	1
5	• H98068	• Valve Body	1
6	• H98070	• Valve Spring	1
7	• 041-0010-09	• Nut	1
8	• H98077	• Closing Bracket	1
9		Lever (Refer to "Base Components " Elsewhere)	Ref

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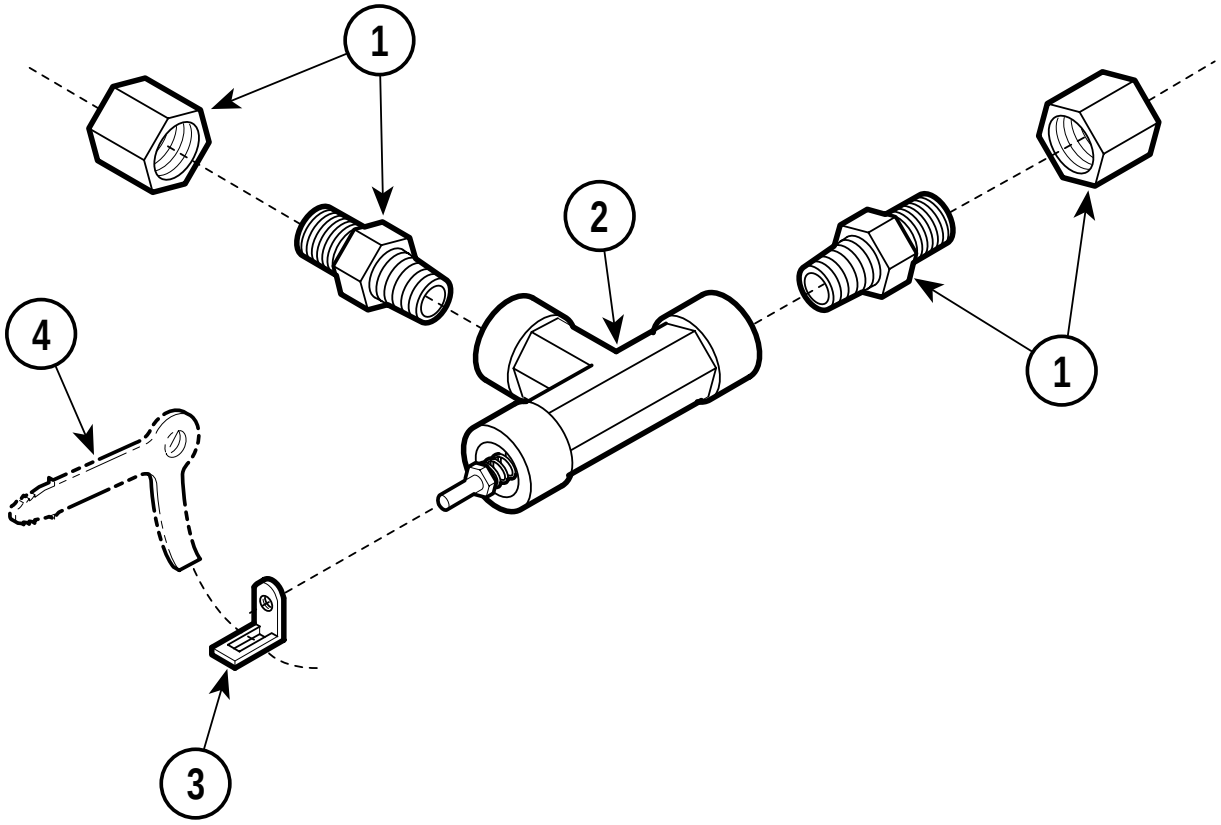
Valve Assembly



MA560400

Used on Units with Serial Numbers MH1803 thru MH3104, MJ1092 thru MJ1242, and ML2134 thru ML4210

Item	Part No.	Description	Qty.
	002-0648-00	Valve Kit (Includes Items 1 thru 3 plus [3] Mounting Clips & [3] Pop Rivets)	1
1	• 014-0183-02	• Fitting	2
	• • 014-0392-01	• • Compression Nut	1
2	• 014-0369-00	• Fill / Vent Valve	1
3	• 050-4793-00	• Valve Closing Bracket	1
4		Lever (Refer to "Base Components " Elsewhere)	Ref.

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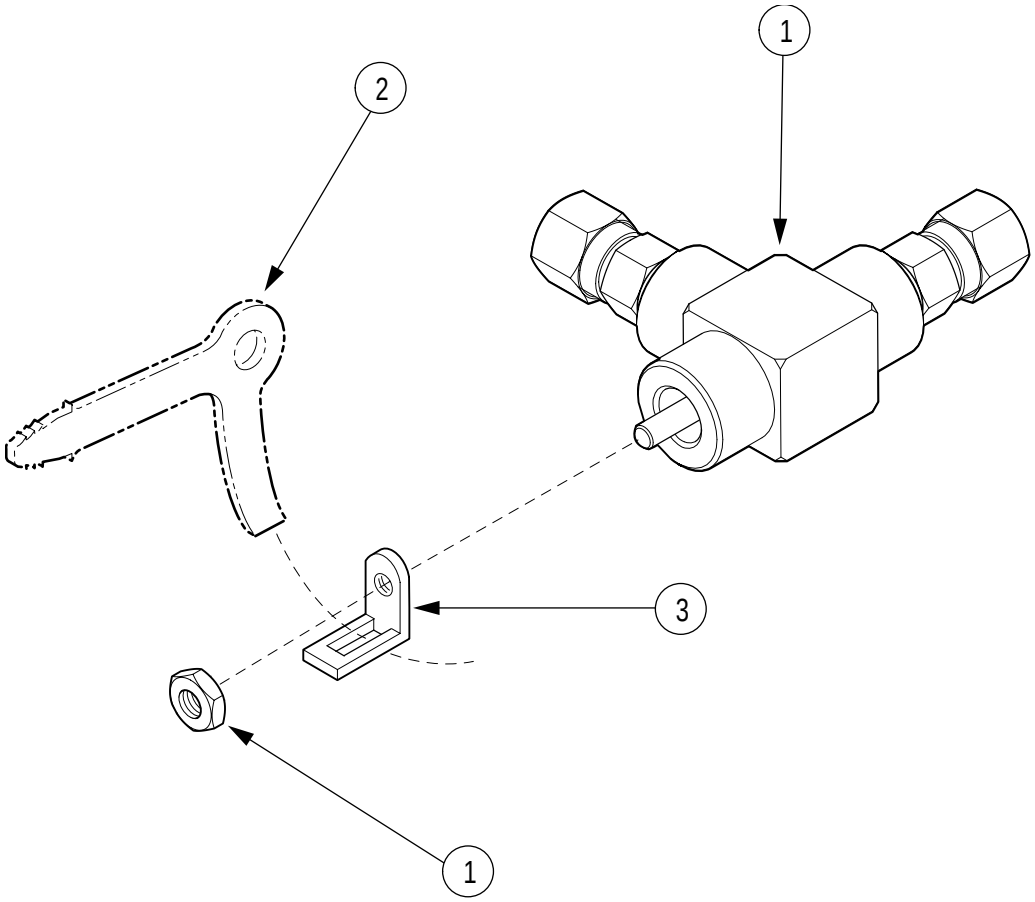
Valve Assembly



MA560401

Used on Units with Serial Numbers MH3105, MJ1242, MK1000, ML4210, MM1000 and MN1000 thru Present

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
	002-0649-00	Valve Kit (Includes Items 1 thru 2)	1	2	• H98077	• Valve Closing Bracket	1
1	• 014-0402-00	Valve1	1	3		Lever (Refer to "Base Components " Elsewhere)	Ref.

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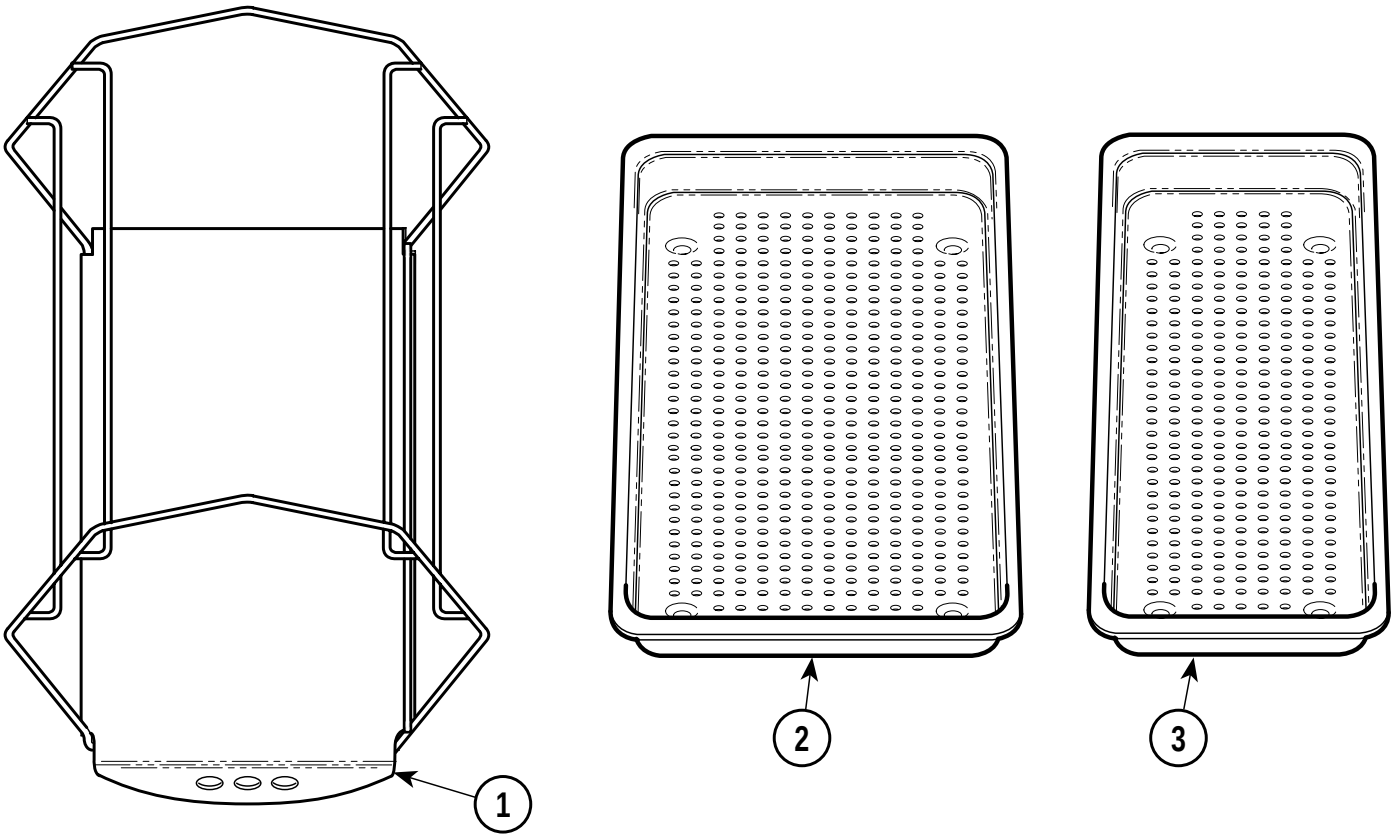
Rack & Trays



MA245701

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	002-0251-00	Wire Rack Assembly	1	3	002-0252-00	4" Tray	1
2	002-0253-00	5" Tray	2				

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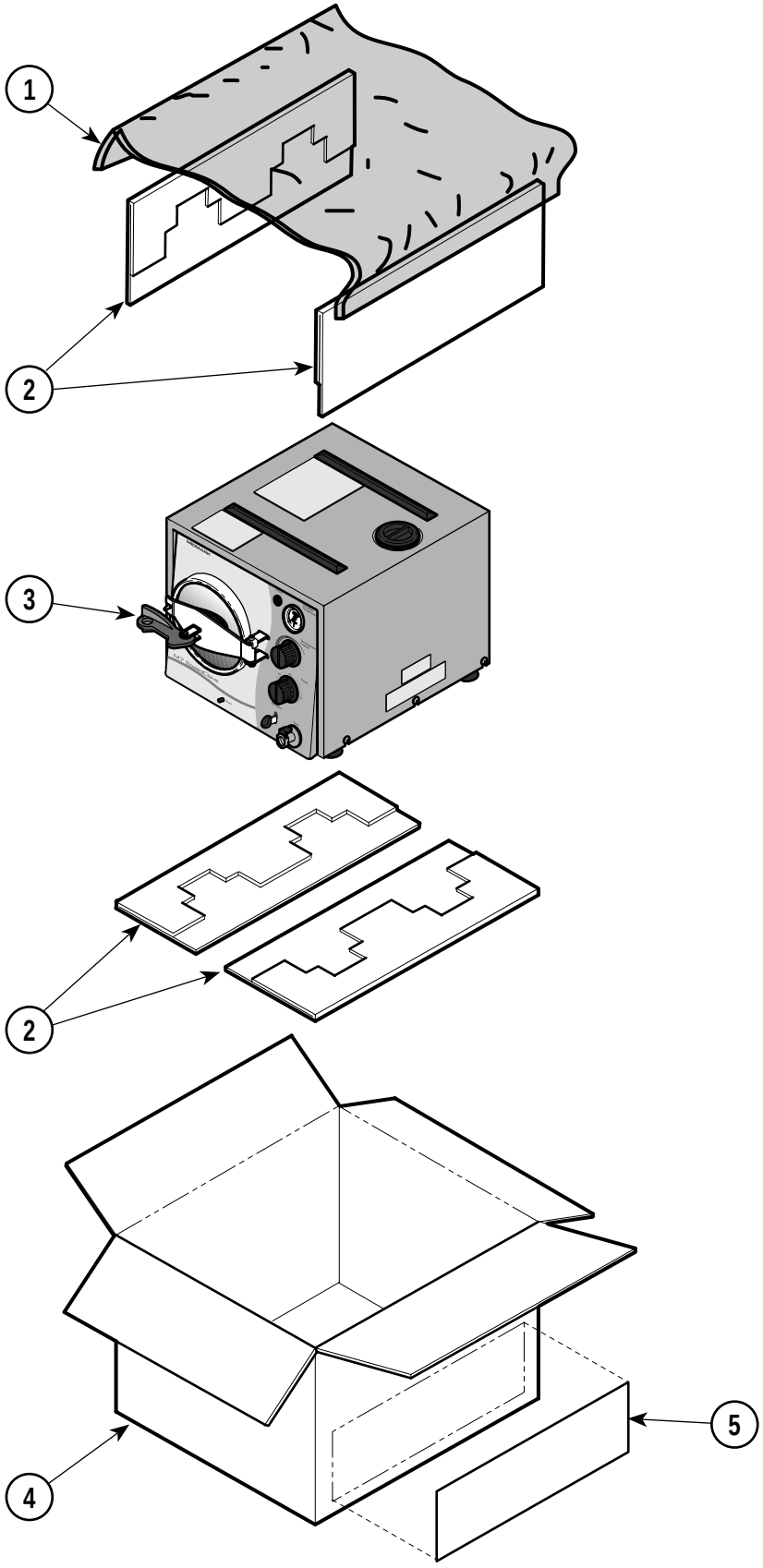
Packaging



MA514700

Item	Part No.	Description	Qty.	Item	Part No.	Description	Qty.
1	053-0061-01	Plastic	1	4	066-0730-00	Carton	1
2	066-0240-00	Insert	4	5	061-0719-00	Label, Midmark	2
3		M7 Sterilizer	Ref		061-0719-01	Label, Ritter	2

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COMMENTS

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FAX ORDERING FORM

(SERVICE PARTS ONLY)

NOTES:

- **ALL BLOCKED AREAS MUST BE COMPLETED.**
- **USE FOR NON-WARRANTY FAX ORDERS ONLY. WARRANTY ORDERS MUST BE TELEPHONED IN (1-800-MIDMARK).**
- **ORDER MUST MEET $35.00 MINIMUM.**

SHADED AREAS TO BE FILLED OUT BY MIDMARK PERSONNEL ONLY.

REP #: _____ **DISCOUNT %:** _____ **DATE:** _____

CAT #: _____ **TECHNICIAN:** _____ **TIME:** _____

ATTENTION: SERVICE DEPARTMENT FAX#: 877-249-1793

ACCT #: _____ **P.O. #:** _____ **DATE:** _____

NAME: _____

ADDRESS: _____

CITY, ST.: _____

CONTACT: _____

PHONE: _____

SHIP TO: _____

☐ **NON-EMERGENCY ORDER - TO SHIP WITHIN 72 HOURS IF PART(S) IN STOCK.**

☐ **EMERGENCY ORDER - TO SHIP WITHIN 24 HOURS IF PART(S) IN STOCK (IF ORDER IS RECEIVED BEFORE 1:30 P.M. E.S.T).**

SEND NOTIFICATION IF PARTS ARE NOT AVAILABLE TO SHIP WITHIN 24 HOURS VIA E-MAIL OR FAX TO: _____

METHOD OF SHIPMENT

OTHER _____

UPS	FED EX
☐ NEXT DAY A.M.	☐ NEXT DAY A.M.
☐ NEXT DAY P.M.	☐ NEXT DAY SAVER
☐ 2ND DAY	☐ 2ND DAY
☐ GROUND	☐ ECONOMY

FA ___
ADD ___

QTY.	PART #	DESCRIPTION (SPECIFY COLOR OF ITEM IF APPLICABLE)	COLOR CODE	PRICE/PER
	SPECIAL CODES:		**TOTAL COST: $**	

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